

The Iron Age

A Chilton Publication

EXCLUSIVE
INTERVIEW—
Republic Steel's
Charles M. White
page 37

THE NATIONAL METALWORKING WEEKLY • JANUARY 13, 1955



it's Your

Q

Quality . . . that costs no more is yours when you choose Fairbanks-Morse Side Suction Centrifugal Pumps. Extensive engineering laboratories . . . production line methods with precision machining of all parts enable Fairbanks-Morse to offer you a side suction centrifugal with the design, workmanship and performance normally obtained only in highest quality split-case pumps.

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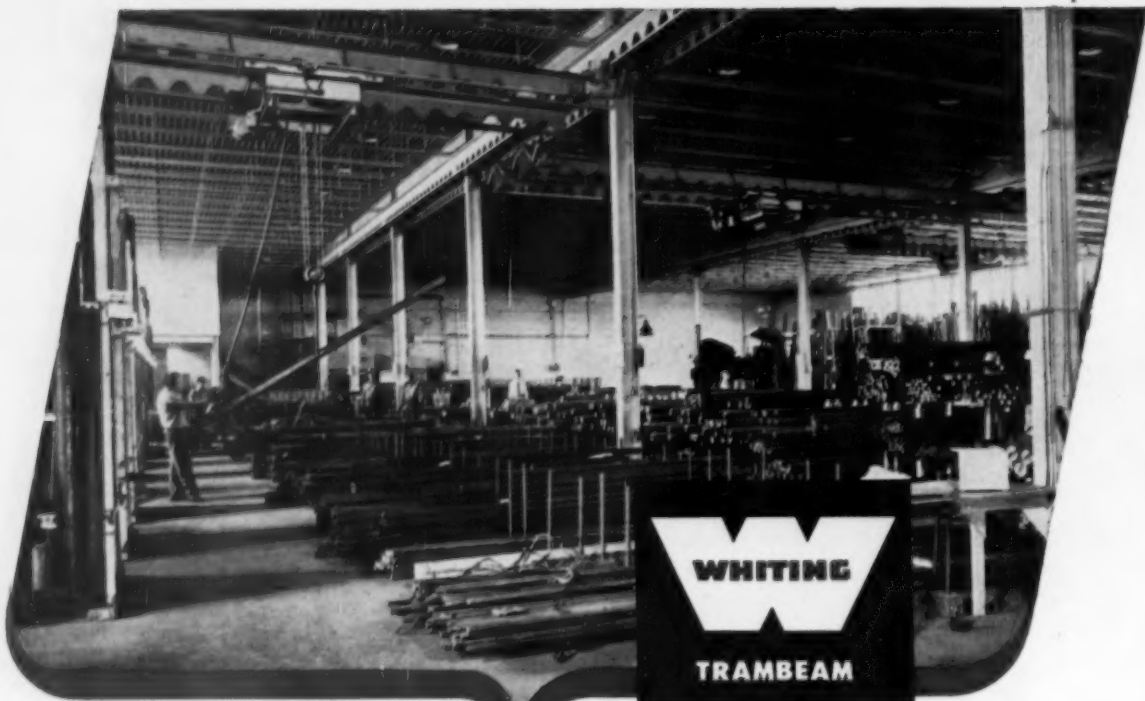
For a "cue" to better pump performance, choose the pumps that spell quality with a capital "Q" . . . Fairbanks-Morse Side Suction Centrifugals. Fairbanks, Morse & Co., 600 S. Michigan, Chicago 5, Ill.



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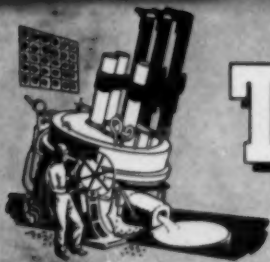
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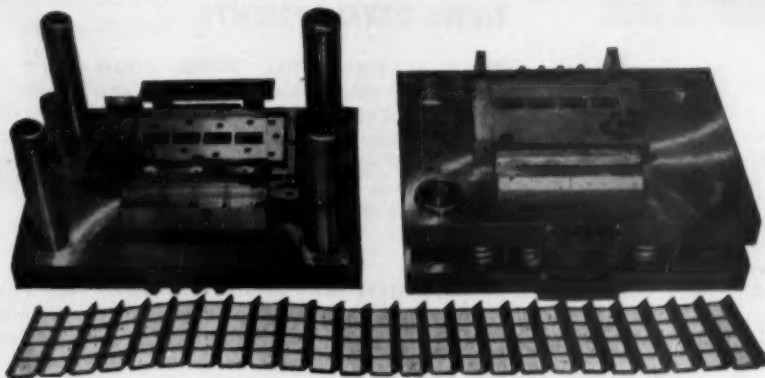


Tool Steel Topics



BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation



Maker of Agricultural Machinery Gets Good Results With Lehigh H

The Gleaner Harvester Corp., Independence, Mo., has every reason to be proud of its revolutionary, self-propelled combine. For this mechanical marvel, with its centerline design, is a joy to behold as it takes large, continuous bites into blowing fields of grain.

Making parts for this practically human thresher and separator calls for some highly specialized dies made from outstanding tool steels. For example, the progressive die shown here, made of Bethlehem Lehigh H tool steel, produces the combine's straw rack (foreground). Operating in a 150-ton press, the die blanks and forms 22-gage galvanized sheet steel, about 50 strokes of the press being required to make each

rack. The die is subjected to more than 20,000 strokes before inspection is required — ample proof of its durability.

Lehigh H is our high-carbon, high-chromium air-hardening tool-and-die steel. It's outstanding for long production runs because of its wear-resistance and toughness. Moreover, it offers minimum distortion during heat-treatment, plus the ability to harden deeply.

Lehigh H is safe-hardening. It is cooled in still air from a hardening temperature of 1850 F, and minimizes the cracking hazards of intricate dies, thin sections, and insufficient radii.

Your tool-steel distributor will be pleased to answer your questions about Lehigh H. He's always at your service.



BETHLEHEM TOOL STEEL

ENGINEER SAYS:



Carburization of Tools Can Be Detrimental

Widely known are the beneficial effects obtained by intentionally carburizing some tools during heat-treatment. In general, wear-resistance of the surface is increased, while at the same time the shock-resistance of the core is maintained. But what is frequently overlooked is that carburized cases added unintentionally can be detrimental to service life.

Laboratory study of failed tools has shown this type of trouble often happens. For example: Rivet sets, failing from brittleness after short service, were found to have a carburized case; coining dies failed by splitting, due to a deep carburized case (0.030 in.); an extrusion punch shattered, due to an excessive carburized case (0.040 in.), containing 3.34 pct carbon.

Unintentional carburized cases commonly result from heat-treatment operations where there is improper control of atmosphere, such as "inert" packing material, "neutral" atmosphere in furnace, and "neutral" salt bath. All of these, of course, are actually carburizing.

The cure for this type of trouble is simple — don't put on a carburized case. Or if you do, be sure to grind it off later. On most tools the required dimensions will not permit grinding off an excessive case. So the practical solution is proper control of the heat-treatment.

High-Speed Tool Steel Cuts 35 Teeth in Bronze Worm Gear

This tangential cutter, fitted with an insert of Bethlehem 66 High-Speed Tool Steel, is shown cutting a tooth on a bronze worm gear. The gear is 74 in. in diameter and is 3-1/16 in. deep. It has 35 teeth, having a circular pitch of 6.25 in. With its excellent red-hardness, balanced abrasion and shock-resistance, Bethlehem 66 High-Speed is an ideal steel for difficult cutting jobs.

Starred items are digested at the right

EDITORIAL

How Not To Be Caught In 1955 7

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NEWS DEVELOPMENTS

DO-IT-YOURSELF STILL RIDING BOOM — P. 35

Homeowners spent some \$7 billion last year in repairs, additions and alterations to their properties. And a terrific proportion of this was done by themselves. Do-it-yourself tool market ran about \$14 million. Boom since 1946 has been terrific—and predictions are that 1955 will continue the upward trend.

REPUBLIC STEEL HEAD SEES BETTER YEAR — P. 37

Charles M. White, president of Republic Steel Corp., thinks steel production in '55 will be 7 or 8 million tons higher than '54, although he expects consumption to show little change. In an exclusive interview with THE IRON AGE he says early soft spots in the market will be oil and gas industries. Mr. White does not think there will be a steel strike in '55.

RAILROAD BUYING STARTS LONG HAUL UP — P. 38

Railroad steel purchases are moving up again, after a year-long slide. There's no doubt roads want to buy more, but their earnings haven't been good. And neither has traffic. The thing to watch in the first half of 1955 is number of carloadings.

SCRAPMEN SEE IMPROVEMENT COMING — P. 40

Scrap industry believes it has beaten problem of excessive inventories. Believe '55 will be marked by increased exports, better price structure. Continue battle against export controls.

PACKAGING BOOMS ALUMINUM FOIL SALES — P. 43

Aluminum foil sales set a record in '53. But '54 volume topped it by 30 pct. And some members of the industry predict the market will about double by 1970. Packaging accounts for about 75 pct.

ENGINEERS WAGE WAR ON AUTOMOTIVE NOISE—P. 52

Style changes, the new high power engines, and power accessories all add to noises that annoy and tire car's occupants. GM has laboratory in constant search for ways to smother or eliminate new sounds.

INSIDE THE VELVET GLOVE IS POLITICS — P. 57

Behind the syrupy talk of bipartisan cooperation in Washington, politics will go on as usual. Having tasted victory last November, the Democrats will concentrate on capturing the White House next year. Republicans are just as determined to keep it.

IN METALWORKING

ENGINEERING & PRODUCTION

STEAM OXIDIZING IMPROVES PAINT BASE — P. 75

One of the chief problems in painting steel or cast iron is poor adhesion. To overcome this, various chemical treatments are used. However, entrapped chemicals sometimes cause trouble by bleeding. Preparing steel or cast iron surfaces by steam oxidizing can eliminate these difficulties and also reduce costs.

WHY STAINLESS IS HARD TO COLD HEAD — P. 79

Forming speed is a vital factor in difficulties encountered in cold heading of stainless steel. As the forming speed rises, stainless rapidly becomes more brittle. Time between blows, in operations requiring more than one blow, sharply affects ductility. A dozen iron-nickel-chromium alloys were tested to determine the cold heading limits at different speeds.

TOOLING PROGRAM EMPHASIZES PRECISION — P. 83

To make and assemble 50 new type power steering units per hour, Chrysler installed 413 machine tools at its Trenton, Mich. plant. Precision to 0.0001 in. is the watchword at this large modern installation.

AUTOMATIC BILLET GRINDER TRIPLES OUTPUT — P. 84

A new automatic billet grinder does a fast full-surface or spot grinding job on alloy steel billets up to 5-in. square. The machine features pushbutton controls for automatic billet handling and uniform wheel pressure. With minimum effort, one man can process three times the tonnage he could handle by using a swing grinder. Built-in safety features have appeal to workers.

PLASTER MOLD PROCESS IMPROVES CASTINGS — P. 89

Thin-walled, smooth surfaced aluminum and magnesium castings, with good physical properties are produced by the plaster mold process. Properties of the plaster are used to obtain thinner sections and smoother surfaces. Plaster permeability has been improved.

MARKETS & PRICES

ELECTRICAL SHEETS, STRIP REVVING UP — P. 41

Last year was a tough one for producers of electrical sheets and strip. But their market has already turned stronger and they expect 1955 will be a much better year. Fractional motors and appliances are leading the upturn. The long term outlook is even more encouraging. Outlook for grain oriented steel is especially promising, and two new producers are now entering this field of super electrical steel.

MACHINERY PRICES LAG LABOR, MATERIALS — P. 63

Machinery and equipment prices during the past 15 years increased less than half as much as wages in the machinery industry. Machinery prices rose 78 pct, while labor rose 167 pct. During the same period, prices of all industrial commodities rose 97 pct. And the gap has been getting wider.

STEEL PRODUCTION STILL MOVING HIGHER — P. 111

This week the steel market is justifying the rosy predictions of the optimists. Despite the higher rated capacity, the ingot rate continues to advance. It is supported by growing strength in the product markets. And, as new orders continue to pour in, steelmakers are adding furnaces to raise production. Deliveries are still getting more extended.

MAY SEE GRAY MARKET IN SHEETS, STRIP — P. 112

Desperate consumers caught short by overwhelming demand are paying \$10 per ton premiums. New faces are in the market for cold-rolled and galvanized rejects. Situation will continue through April.

PRICE HIKE JOLTS ALUMINUM INDUSTRY — P. 116

Reynolds Metals took the ball and ran with it last week. The firm boosted primary aluminum prices 1¢ per lb and took the industry almost completely by surprise. But all agreed that the increase was justified. Others will follow shortly.

NEXT WEEK:

TEMPERATURE CONTROL LENGTHENS POT LIFE

Modern research has taken the mystery out of what happens in the hot dip galvanizing pot as temperature rises. The result has been longer pot life through a better understanding of zinc-iron alloy formation. The best bet for long pot life is to keep the galvanizing bath temperature under 885°F. Apply heat uniformly.

APPLIANCE SALESMEN BREAK RECORDS — AGAIN

Despite a standing start in 1954, and a limping first half, appliance manufacturers spurted through second half to top the sales record they established in 1953. They say they'll do it again in 1955. And they're backing it up with healthy purchases of steel and components. The outlook is good.

AJAXOMATIC POURING UNIT

In Operation at Montrose Division,
BENDIX AVIATION CORPORATION



Photo shows installation of AJAXOMATIC Combined Holding Furnace and Automatic Pouring Unit in connection with die casting machine. In circle at right is shown a closer view of the spout from which uniform shots of molten aluminum alloy are ejected at exact time intervals by means of an electronic timer, which works with the accuracy of a lens shutter.

NOW completely automatic die casting of aluminum alloys is possible in smaller quantities than formerly, and at reduced cost. This fact should be of special interest to the manufacturer who has die casting machines in operation and is doing hand ladling. The unit is entirely sealed, the operator feels no heat, accident hazard is eliminated.

This small, compact AJAXOMATIC* unit will increase production of die castings by as much as 25%, because it delivers regular, uniform quantities of metal into the die casting machine with no delay, immediately after dies are closed. The spout itself is heated and the temperature of each metal shot remains constant.

*Trade Mark, Registered

For further information send for descriptive folder

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who design...
to the men
who use...

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30,000-lb.
propeller being
handled with one
8-part ATLAS
Braided Sling in
figure 8 Choker-
Hitch. Notice
how the braided
body hugs the
contour of
the load.

A sling designed to handle easily will handle loads faster. That's the reason why flexibility, lightness, and handling ease are part of the basic design of Macwhyte ATLAS Round-Braided Slings.

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containing load rating tables,
illustrations, and general
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January 13, 1955

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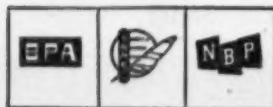
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Indexed in the Industrial Arts Index
and the Engineering Index.



Editorial:

How Not To Be Caught In 1955

QUITE a few businessmen are worrying privately about a possible stock market crash. Others secretly fear a business recession in the second half of this year. Why they feel this way no one really knows. It might take a psychiatrist to figure out why people always are entranced with bad news when good news abounds.

But the fellow who wants to make a showing for his company—and for himself—has to have something more substantial to go on than fears and phobias. Our crystal ball is as good as the next person's so we give you a formula which ought to keep you up front.

¶ Step up your inventory on steel products. Remember you took a lot out of it last year. Business is much better and will improve further. Steel inventory is as good as money in the bank.

¶ Expand your promotion and advertising if you want to nose out your competitor; if you want your customers to know you are still in business; and if you want to protect what you have spent.

¶ Take full advantage of faster writeoffs on capital equipment as allowed in the new tax laws. Your wage costs are going up in 1955 whether you like it or not. Modern machinery will never reduce your costs unless you buy and install it in your plant.

¶ Assume that we are going to spend more for defense. Then figure what impact that will have on your business. Assume also that the national budget will not be balanced for some time; so we will be in a "controlled" inflationary period for quite awhile.

¶ Analyze the connection between your sales and what Mr. and Mrs. Jones buy. There will be no slow-up in consumer spending this year. Remember that people have a way of patronizing those who have what they want when they want it. They don't warn you when they leave you for another supplier.

¶ Take a chance that railroad buying will bounce this year. Take for granted that construction and auto buying will be higher this year than last—and recall what impact they have on you.

¶ Don't let your personal political views or your scar tissue from past wounds foul your 1955 planning. If you do this you won't grow with your country.

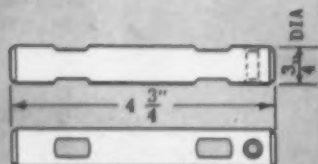
There is no such thing as a "sure thing." You take a chance no matter what you do. Boldness is still a business virtue.

Tom Campbell

EDITOR

THERE'S ONLY ONE WAY TO DO A JOB BEST... *Another Production Solution*

THE JOB TO BE DONE

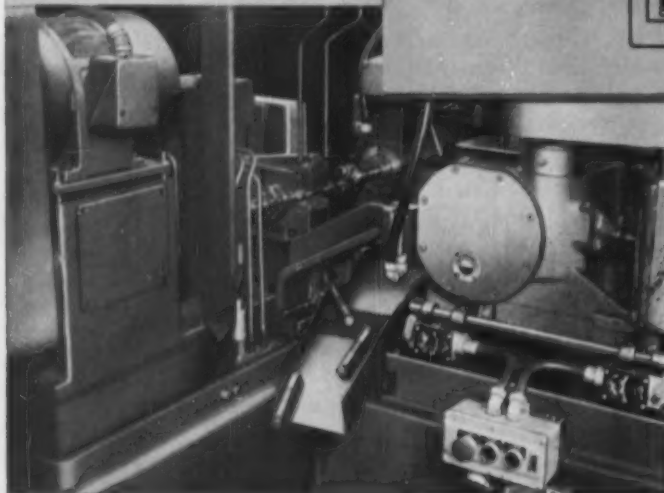
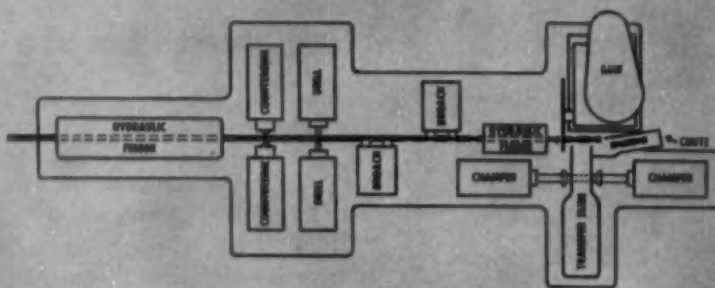


Part: Differential pinion shaft.

Operations: Countersink, drill, broach two sides, Triple-Chip cut off, and chamfer both ends.

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M & M attained production of 300 pieces per hour at 100% efficiency.

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MACHINERY MANUFACTURING DIVISION
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dear editor:

Thank You

Sir:

I always enjoy your Fatigue Cracks page. Keep up the good work.

Also, I cannot let this opportunity pass without expressing my appreciation of the wonderful and heartwarming editorials by Tom Campbell. You can add my name to an undoubtedly long list of his admirers. *A. H. Peirce, Concord Steel Corp., New York.*

Scrap Information Needed

Sir:

We are interested in securing information regarding the origin of the scrap iron and steel business in the United States and particularly the part which was played by Jews since the business was originally begun. We have not been able to locate very much literature which indicates where, when, and why the scrap business was originally founded, nor have we located any printed matter dealing with the subject of the personalities who founded this industry.

If you can contribute anything in the way of information, facts, comments, which might have been handed down either in family lore or literature or family papers, such as letters or diaries, please send the material directly to the American Jewish Archives, Clifton Ave., Cincinnati 20, Ohio. *J. R. Marcus, American Jewish Archives, Cincinnati.*

Silicate Coating

Sir:

On p. 69 of the Dec. 16 issue of IRON AGE, is an article headed "Silicate Coating: Paint On and Fire."

We are most anxious to obtain further information about this material and to learn where it can be purchased. Will you please give us any data which you may have,

letters from readers

or advise us to whom we may write? *R. L. Gehrt, Vice-President, Herff-Jones Co., Indianapolis.*

Details on the silicate coating may be obtained by contacting the Armour Research Foundation of Illinois Institute of Technology, Technology Center, Chicago 16, Ill.—Ed.

Ductile Iron Tubing

Sir:

In the Dec. 16 issue, p. 69, is mention of tubing being produced from ductile iron experimentally by at least one company.

I am interested in this type of product and would appreciate it if you would let me know who is referred to in this article. *Perry Kilsby, Perry Kilsby, Inc., Los Angeles.*

Further information may be obtained from the International Nickel Co., 67 Wall St., New York, N. Y.—Ed.

Mexican Ore

Sir:

Your Dec. 30 issue, p. 15, has an article on a Mexican iron ore deposit entitled "Wider Use of Mexican Ores Seen." Could you give us some more details about this deposit, particularly the name of the deposit, location and ownership? *Martin Wolf, Vice-President, Continental Ore Corp., New York.*

The Republic Steel Corp., Republic Bldg., Cleveland 1, Ohio, will be able to furnish you with this information.—Ed.

Extrusion Press

Sir:

In the Newsfront section of your Dec. 23 issue, mention is made of a special press for direct extruded aluminum sheet cable. I shall appreciate receiving further information and would like to know who is manufacturing the press. *C. F. Carpenter, Industrial Consultant, Allentown, Pa.*

Details may be obtained by contacting the General Cable Corp., 420 Lexington Ave., New York 17, N. Y.—Ed.

What does "S. B." mean to you?



To some, it means Sand Blasting... the big blow that gives old buildings that new look. But, to hundreds of industrial designers, it means Small Balls... at which Universal is best.

Sure, we make balls from the size of a mustard seed up to that of a walnut, each of them precisioneer for true roundness and silken silence. Write for details.

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Ball co.**

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MONTGOMERY CO., PA.

AUTOMATIC FORGING

with

SELAS GRADIATION HEATING



"Forging in Mid-Air" produces quality die forgings automatically . . . economically . . . at high production

Forged pliers, scissors, wrenches, shears, turbine blades and forceps are typical parts manufactured by Chambersburg Engineering Company's new Cecomatic Process. Forgings weighing from a few ounces to hundreds of pounds can be produced with this automatic technique.

In the forging of pliers, Selas high-speed heating automatically furnishes 9/16 x 9" bar stock at 2100°F to the Impactor, to permit production rates of up to 1000 forgings per hour. Total fuel and power costs of the furnace are less than \$1.00 per hour.

Virtual elimination of scale . . . reproducible heating uniformity from piece to piece . . . compact equipment . . . work size flexibility . . . operator comfort . . . are other features of Gradation heating.

This is another example of Selas Thermo-Automation at work. This advancement in continuous heat processing offers similar advantages of speeding production, improving quality and cutting manufacturing costs in many industries, including metalworking, petroleum refining, chemicals, steel, textiles and others.

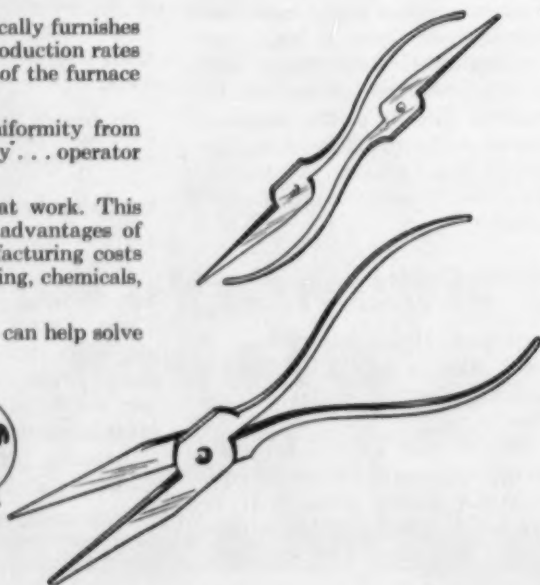
Selas heat processing is designed for the end-product. We can help solve your heating problem. Write for information.

SELAS



CORPORATION OF AMERICA

PHILADELPHIA 34, PENNSYLVANIA



fatigue cracks

by William M. Coffey

January, 1955

The years come and go, but the holidays go on forever. Here's the way we start off a brand new year.

- | | |
|---------------|--|
| January 1 | You guess this one. |
| January 2-8 | Odorless Decoration Week. |
| January 8 | Anniversary of the Battle of New Orleans. Legal holiday in Louisiana and for all Jacksons everywhere. |
| January 13 | Stephen Foster Memorial Day. Legal holiday for all Fosters everywhere. |
| January 14-21 | Jaycee Week. |
| January 14-22 | Take Tea and See Week. |
| January 19 | Robert E. Lee's Birthday. Legal holiday in Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Texas and South Stamford. |
| January 19-29 | Large Size Week. |
| January 22-29 | Crochet Week. |
| January 23 | Pre-Spring Millinery Promotion Begins. |
| January 24-29 | Potato Chip Week. |
| January 26 | General Douglas MacArthur Day. Legal holiday for Bill Coffey. |

Letters

Gentlemen:

My name has appeared in your *Fatigue Cracks* column as a winner on three puzzles, but to date I have received no prizes.

I would appreciate being advised as to what has been won and when same will be sent.

Very truly yours,
Mrs. _____

This one puzzled us for some time and we're sorry to say we procrastinated an answer to the extent that the lady called our Cleveland office and wanted an account-

ing. Our Cleveland editor, Tom Rohan, sent us this:

Dear Bill:

We have a crisis in Cleveland. The prestige of THE IRON AGE is at its lowest ebb. Your trusty Cleveland reporter is therefore rushing into the breach to stem the tide and keep the grand old name from being sullied.

Mrs. _____ is a faithful reader of *Fatigue Cracks*. She works out the puzzles faithfully and some weeks ago she hit the answer on the nose. She says her name was even mentioned as one of the prize winners. She phoned here to ask what the prize is.

To uphold the prestige of THE IRON AGE in Cleveland, we have therefore procured through devious means a 1955 LINCOLN CAPRI windshield wiper which you are at liberty to forward to her for her prize. I haven't the nerve to send it direct.

We are sending this to Mrs. _____, with our apologies for our tardiness. We wish to point out, however, that this is a special case and that this is the very first prize we have ever presented to a puzzler winner. But, please, keep sending the answers.

Evolution of an Injury

"Injury," said the workman,
"Inattention" said the foreman,
"Inflammation" said the doctor,
"Incurable" said the hospital,
"Incredible" said the mourners,
"Interred" said the undertaker,
"In peace" said the tombstone.

—Industrial Nurse

Puzzlers

Mr. P. A. Smith, Winchester Repeating Arms Co., New Haven, Conn., kindly sends us this:

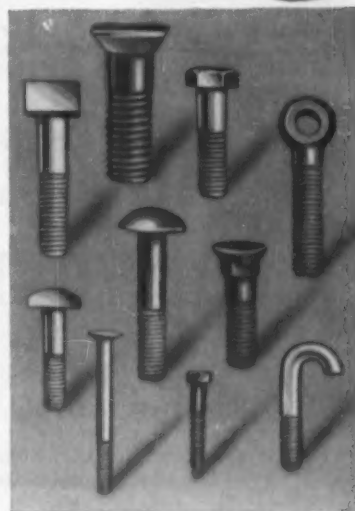
Three cylinders, each 2" in diameter, intersect each other at right angles so that their axis' pass through a common point. What is the volume common to all three cylinders?

Threaded Specialties

lower cost
TEE BOLTS
by an
exclusive method

Among Pawtucket's many specialty products are these lower-cost tee-head bolts. Pawtucket's exclusive production method keeps cost low, dimensional accuracy unusually high and strength above standard. Pawtucket tee head bolts are made in standard sizes 1/4" and larger, or to your specifications. In any size, you can depend on a uniform Class 3 fit, if required.

All standard steels, stainless steels and non-ferrous metals, including Titanium



BETTER BOLTS SINCE 1882

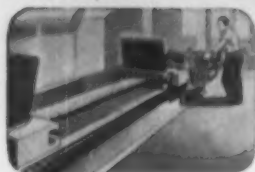
PAWTUCKET



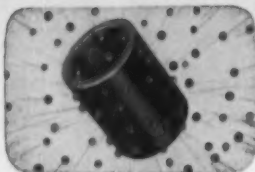
MANUFACTURING COMPANY
327 Pine St. • Pawtucket, R. I.
THE PLACE TO SOLVE YOUR BOLT PROBLEMS
T.M. REG.

"The Bolt Man"

January 13, 1955



PRE-STRESSING of multiple width chain provides uniform load distribution.



SHOT-PEENED ROLLERS have greater fatigue life, added ability to withstand impact.



CLOSER HEAT-TREAT CONTROL — coupled with rigid testing insures uniformity.



LOCK-TYPE BUSHINGS (applied on a range of sizes) end a cause of stiff chain.

How EXTRAS* like these cut your roller chain costs

***And you pay no premium for these LINK-BELT extras**

LINK-BELT Precision Steel Roller Chain meets the three big requirements for lower drive and conveyor costs.

(1) **Long life**— Added manufacturing refinements like the four shown above are your assurance that Link-Belt roller chain lasts longer.

(2) **Low maintenance costs**— High resistance to wear eliminates frequent adjustments.

(3) **High efficiency** — Positive action, independ-

ent of atmospheric conditions. No power loss through slippage or excessive bearing friction.

You can get complete information from 148-page Data Book 2457. It covers single and multiple width roller chain and sprockets in $\frac{1}{4}$ " through 3" pitch, 1" through 3" double pitch. Ask your nearest Link-Belt office or authorized stock carrying distributor for a copy today.

LINK-BELT

ROLLER CHAIN & SPROCKETS

13,007

LINK-BELT COMPANY: Executive Offices, 307 N. Michigan Ave., Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office, New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville, N.S.W.; South Africa, Springs. Representatives Throughout the World.

dates to remember

JANUARY

AMERICAN SUPPLY & MACHINERY MANUFACTURERS ASSN., INC.—Regional meeting, Jan. 12-15, Biloxi, Miss. Association headquarters are at 2130 Keith Bldg., Cleveland.

STEEL SHIPPING CONTAINER INSTITUTE, INC.—Winter meeting, Jan. 19-20, Hampshire House, New York. Institute headquarters are at 600 Fifth Ave., New York.

SOCIETY OF PLASTICS ENGINEERS, INC.—Annual national technical conference, Jan. 19-21, Chalfont-Haddon Hall Hotel, Atlantic City, N. J. Society headquarters are at 513 Security Bank Bldg., Athens, Ohio.

EXPOSITIONS

NATIONAL ASSN. OF CORROSION ENGINEERS—Annual meeting and Show, Mar. 7-11, Palmer House, Chicago. Association headquarters are at 1061 M & M Bldg., Houston.

AMERICAN SOCIETY FOR METALS—Western Metal Exposition and Congress, Mar. 28-Apr. 1, Pan Pacific Auditorium, Los Angeles. Society headquarters are at 7201 Euclid Ave., Cleveland.

STEEL PLATE FABRICATORS ASSN.—Annual meeting, Jan. 20-21, Palmer House, Chicago. Association headquarters are at 79 West Monroe St., Chicago.

MALLEABLE FOUNDERS' SOCIETY—Semi-annual meeting, Jan. 21, Cleveland Hotel, Cleveland. Society headquarters are at Union Commerce Bldg., Cleveland.

INDUSTRIAL HEATING EQUIPMENT ASSN., INC.—Annual meeting, Jan. 24-25, Sheraton-Cadillac Hotel, Detroit. Association headquarters are at 412 Fifth St., N. W., Washington.

PLANT MAINTENANCE & ENGINEERING SHOW—Jan. 24-27, International Amphitheatre, Chicago. Show Management: Clapp & Polak, Inc., New York.

TRUCK TRAILER MANUFACTURERS ASSN., INC.—Annual convention, Jan. 27-29, Boca Raton, Fla. Association headquarters are at Room 710 Albee Bldg., Washington.

FEBRUARY

CUTTING TOOL MANUFACTURERS ASSN.—Annual meeting, Feb. 2, Detroit Yacht Club, Detroit. Association headquarters are at 416 Penobscot Bldg., Detroit.

AMERICAN INSTITUTE OF MINING & METALLURGICAL ENGINEERS—Annual meeting, Feb. 14-17, Conrad Hilton Hotel, Chicago. Institute headquarters are at 29 W. 39th St., New York.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS—Founding Anniversary meeting, Feb. 16, New York. Society headquarters are at 29 W. 39th St., New York.

DROP FORGING ASSN.—Winter Industry meeting, Feb. 17-18, Statler Hotel, New York. Association headquarters are at 605 Hanna Bldg., Cleveland.

MARCH

PORCELAIN ENAMEL INSTITUTE—Pacific Coast conference, Mar. 10-11, Biltmore Hotel, Los Angeles. Institute headquarters are at Dupont Circle Bldg., 1346 Connecticut Ave., N. W., Washington, D. C.

AMERICAN SOCIETY OF TOOL ENGINEERS—Annual meeting, Mar. 14-15, Shrine Auditorium and Exposition Hall, Los Angeles. Society headquarters are at 10709 Puritan Ave., Detroit.

STEEL FOUNDERS' SOCIETY OF AMERICA—Annual meeting, Mar. 15-16, Drake Hotel, Chicago. Society headquarters are at 930 Midland Bldg., Cleveland.

Believe it or not!



a Machine Tool Weldment

Bases like this, Fabricated by Acme

excel in Strength, Rigidity, and Precision

Finish . . . save Weight and Cut Costs.

No Design is too complicated

. . . not even Yours!

In Doubt? Ask for Bulletin B-3
"The Facts about Weldments and Castings"



ACME WELDING

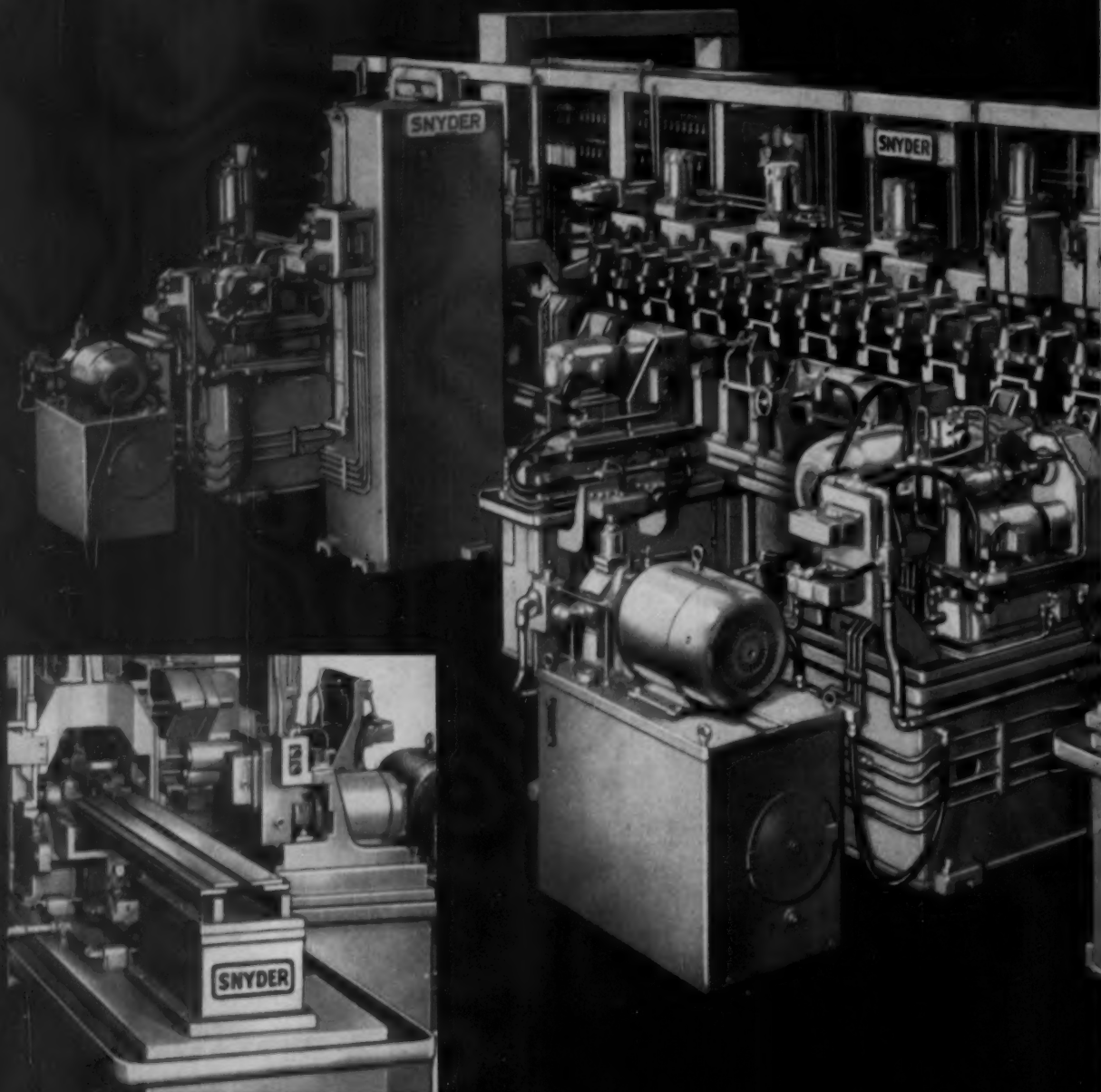
DIVISION OF THE UNITED TOOL & DIE CO.

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STEEL
STAINLESS STEEL
EVERDUR
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A.S.M.E. U68-U69 Qualified Welders • A.P.I. - A.S.M.E. Approved
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This is the discharge end of the machine. The port, which is originally in vertical position, is laid horizontally and swung 90° to expose all sides to the tools.

SNYDER SPECIAL automatic
 24-station transfer machine for processing automotive
 water pump housings; drills, mills, faces, chamfers, taps
 all holes and probes tap drill holes. Production, 81 pieces
 an hour at 80% efficiency.



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SNYDER

TOOL & ENGINEERING COMPANY
3400 E. LAFAYETTE, DETROIT 7, MICHIGAN

30 Years of Successful Cooperation with Leading American Industries

REFRIGERATOR MANUFACTURERS USE MICROHONING

*to cut
processing
costs*

In this cost-conscious era of close competition, there is a constant search for methods to reduce manufacturing costs. One way this is being accomplished by manufacturers of refrigeration equipment... is by making full use of the Microhoning process on vital functional surfaces of parts such as the bearing plate, crank case, main frame, front head casting, connecting rod, cast-iron housing, cylinders, pistons, and various small bushings.

What is Microhoning and how does it reduce manufacturing costs?

Microhoning is an abrading process that combines stock removal, geometric accuracy, size control and surface finish into one automatic operation. The rotating and reciprocating, automatically-expanding tool self-dresses its abrasives through its own motions, while faithfully duplicating the required surface finish.

The savings are in time, effort and equipment required to obtain comparable results by any combination of other means. Why not have a Micromatic Field Engineer discuss with you the advantages of Microhoning in your processing plans?



Write today for
Cross-Hatch
Vol. 6—No. 4

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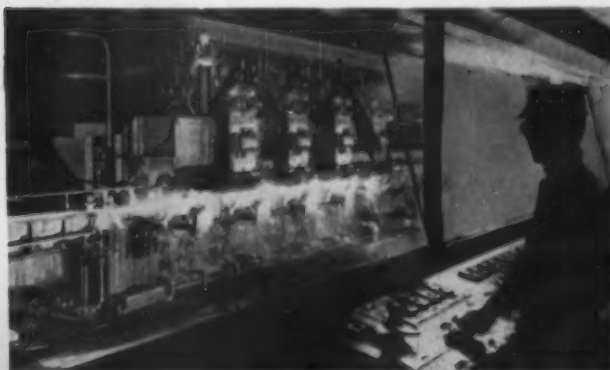
REPRESENTATIVES: Allied Northwest Machine Tool Corp., 103 S.W. Front Ave., Portland 4, Oregon • Mason Machine Tool Company, 415 So. Second East, Salt Lake City, Utah • Tidewater Supply Co., Charlotte 4, North Carolina
Parine Machinery & Supply Co., 1921 First Ave., South, Seattle 4, Washington

REPRESENTATIVES IN ALL PRINCIPAL COUNTRIES

The majority of America's homes must be rebuilt or remodeled. Sixty-seven percent of homes are now over twenty years old; fifty percent are over thirty years old. Since 1950, three million new homes have been built but the population has increased by nine million and continues to increase. *The prediction for 1955 — one million, three hundred thousand homes — an increase of 100,000 over 1954.*

Homes require great tonnages of steel, copper, brass, aluminum, other metals, rubber and plastic. Construction and equipment of a modern six-room house may take up to 7,000 pounds of steel alone, plus tonnages of other metals and materials.

Are your plants equipped to meet volume demands at proper cost or are you losing sales position by inefficient, high-cost equipment? Good equipment brings down production costs.



This Continuous Butt Weld Pipe Mill produces $\frac{1}{2}$ " to $1\frac{1}{2}$ " pipe up to 1,250 feet per minute. How does this speed compare to the speed of your pipe mill? In addition to pipe and tube mills, Aetna makes other basic machines for producing, processing and fabricating steel, copper, brass, aluminum, rubber and plastic, including: Continuous Coating Lines, Rolls, Flat-Rolled Finishing Equipment, Drawbenches and related equipment; Machinery for Rubber and Plastic.

Good equipment keeps down production costs.



SUBSIDIARY and ASSOCIATED COMPANIES

Heed Wrightson Machine Company, Ltd., Middlesbrough, England — Great Britain, Finland, Sweden, Norway, Denmark, Union of South Africa, Northern and Southern Rhodesia.
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THE AETNA-STANDARD ENGINEERING COMPANY - PITTSBURGH, PA.

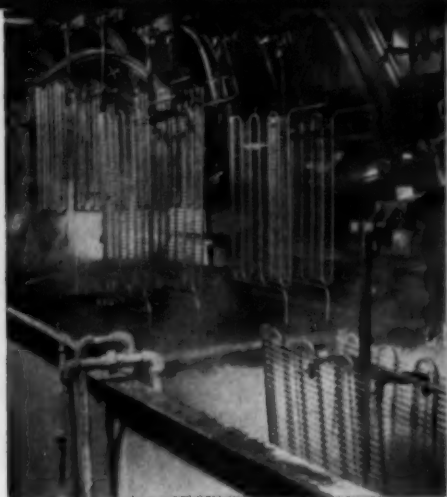
Aetna-Standard

PLANTS IN WARREN, OHIO • ELLWOOD CITY, PENNSYLVANIA

**GOOD EQUIPMENT BRINGS DOWN
PRODUCTION COSTS**



1. The Shopping Carrier you use at super-market or grocery, made of welded steel wire, may have come from United Steel and Wire Company where a variety of models are produced at a 500-a-day clip. Finish must be extra smooth to prevent torn packages.



2. Home Freezer Shelves are given a bright chrome finish on this automatic plating line. Steel wire must be clean and smooth as plating will magnify the slightest surface imperfections.

Steel

Truly, the uses for steel wire seem inexhaustible, and Pittsburgh Steel Company makes wire for nearly all of them.

Yet today a whole new field of uses has emerged, one that is expanding so fast there has been little effort to tabulate its growth. This is the market for formed wire products. The uses of steel wire have taken on a whole new dimension as more and more formed wire products are designed and built for everything from grocery carriers to bird cages.

• Creative Minds At Work — Formed wire products are not entirely new. Perhaps they began with the first coat hangers, bustles, or wire-backed chairs. But since World War II, the myriad uses produced by creative designers have opened broad new horizons. Today you find steel wire going into such diverse products as utility containers, modern furniture, letter holders, wall decorations, and outdoor grilles.

To quickly grasp the size of this new dimension, take a look at one of the nation's leading producers of formed wire products—United Steel and Wire Company of Battle Creek, Michigan. Since the end of World War II, it has



3. Ice Cream will be frozen in these hardening cases. Once welded, the wire is galvanized to protect against corrosion. United holds forms and jigs for 400 special sizes.



4. Your Milkman may deliver your milk on one of these wire bottle crates made by United at a rate of 3,000 daily. Sturdily built, yet light in weight, they have self-cleaning features.

Wire Takes On A New Look

nearly doubled the size and scope of its operations.

In one year United produces some 4,500,000 shelves for several well-known makes of home refrigerators; 875,000 shelves for commercial refrigerators; 900,000 milk crates and ice cream hardening cases; 750,000 baskets of various types; 100,000 grocery carriers; and additional hundreds of thousands of point-of-sale display stands; outdoor grilles; beverage cases; dish racks; and bird cages. To make these products, United uses about 15,000 tons of wire annually—an important share of it from Pittsburgh Steel Company.

Structural advantages of formed wire products include strength and rigidity with light weight. Wire construction provides for self cleaning and permits air or liquid circulation.

• Importance Of Quality—Steel wire that goes into these products ranges in sizes from nearly one-half inch to less than one-tenth of an inch in diameter. It has to be strong, yet ductile enough for easy welding on intricate automatic multiple welding machines. It has to have an extra smooth and clean surface to permit chrome and nickel plating, galvanizing or painting,

and produce an attractive yet durable finish.

To produce this wire, United relies on wire makers with long know-how. Pittsburgh Steel Company, one of United's important suppliers, has had more than 50 years' experience in wire making. Its range includes everything from large diameter basic bright wire to intricate specialty wires as fine as a human hair.

Pittsburgh Steel has long produced quality spring wire including low, medium and high carbon, and alloy; M. B. hard drawn; and oil tempered. It has a good reputation for production of quality ACSR core wire for cable, welding wire, rope wire, cold-heading wire, flat and shaped wire, rivet wire, screw wire, and nails. Its

fabricated products include a full range of farm and lawn fence, chain link fence, and welded wire fabric for construction.

This combination of know-how and modern facilities enables Pittsburgh Steel to supply the kind of wire United needs for its broad line of formed wire products.

If you are making formed wire products, why not look into the opportunities with Pittsburgh Steel's basic bright wire and plating quality wire? Chances are good it will be worth your while to call the nearest district sales office to have a salesman call to discuss your problems and offer suggestions, or to give you information on prices and delivery. You'll find him ready to serve you right now!

"Everything New But The Name"

Pittsburgh Steel Company

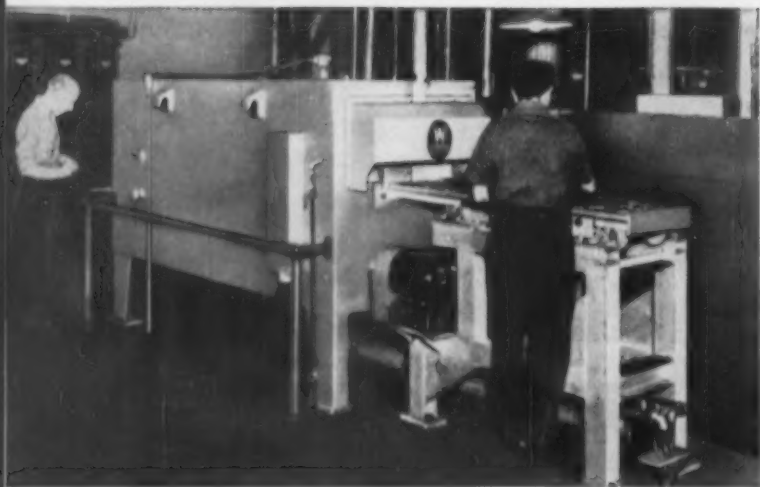
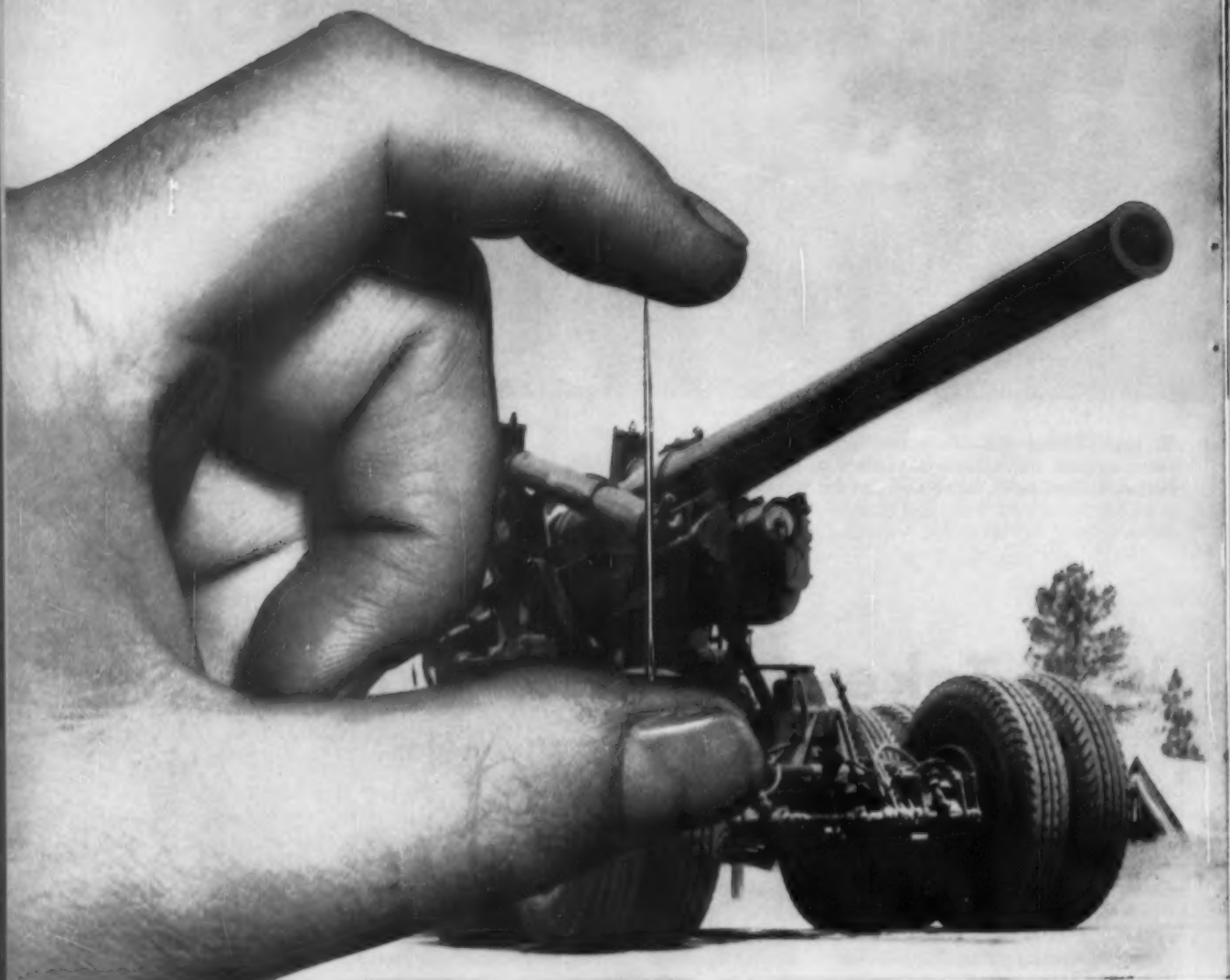
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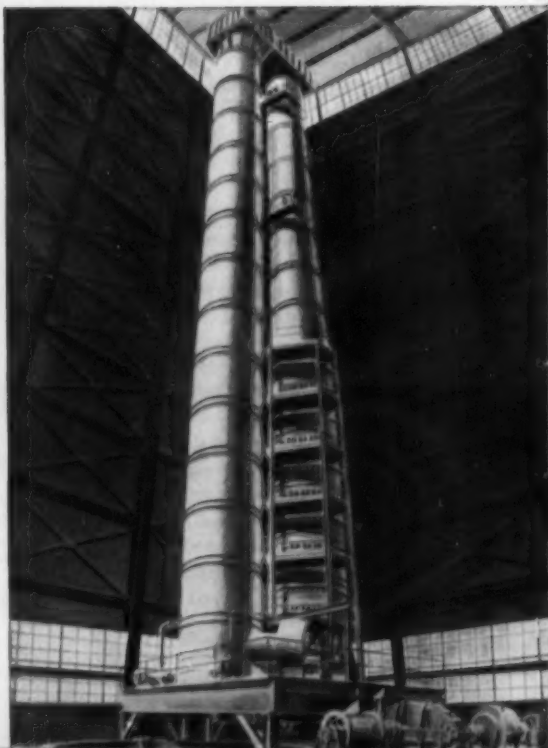


Write for your copy of the color brochure "The New Pittsburgh Steel Company."

(Advertisement)



FROM BOX TYPE TO ELEVATOR TYPE . . . this wide range of Westinghouse furnaces offers industry heat-treating units specially engineered for the smallest toolroom jobs on up to furnace capacities for massive parts treating. Accurate temperature control, uniform temperature distribution and low heat loss in Westinghouse furnaces assure high and constant quality level.



Needles to cannon barrels...

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Across the board in heat-treating, for small jobs or mass production, Westinghouse makes the exact furnace needed. From manually operated box type to complex automatic conveyor units, Westinghouse furnaces assure the maximum in speed, quality and economy.

This complete line includes furnaces using either gas or electric heat source . . . atmosphere generators providing all gas variations required . . . and auxiliary equipment to speed and simplify work handling.

Specialized Engineers and Facilities Work for You

Westinghouse offers a unique and comprehensive service that extends ideas, know-how and

capacity to solve heat-treating problems: At any stage of planning or production, Westinghouse engineers can be called to your plant for sound, unbiased recommendations that will help you get more from heat-treating operations. Skilled designers, packaged installation techniques (even to complete erection and installation where needed) and maintenance follow-through, combine with this engineering staff to form a dependable service that is unmatched in the heat-treating field.

Use coupon below for your free 40-page book on the complete line of Westinghouse furnaces and equipment. For further information write Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa. J-10433

YOU CAN BE SURE...IF IT'S

Westinghouse



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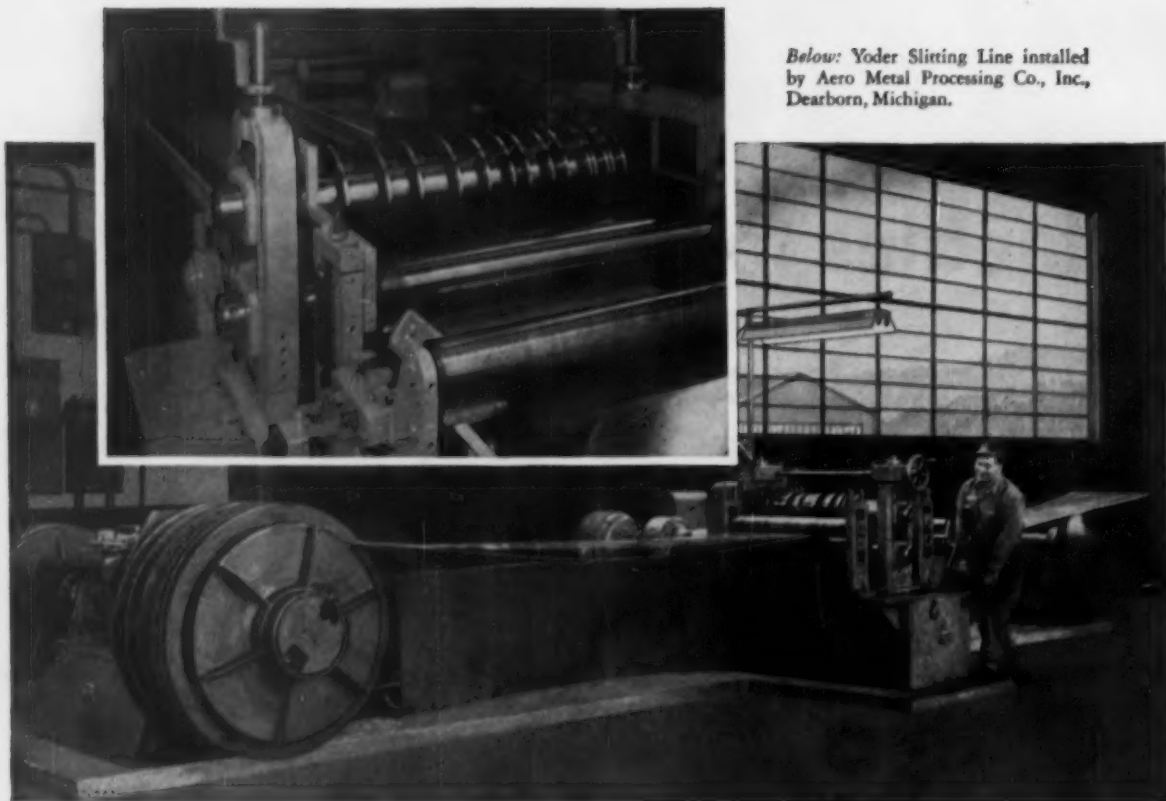
Name _____ Title _____

Company _____

Address _____

City _____ State _____

Below: Yoder Slitting Line installed by Aero Metal Processing Co., Inc., Dearborn, Michigan.



When is a Slitting Line Profitable ?

● Many variables are to be considered in determining where and when a slitting line becomes a good investment. Also of what size, type, speed it should be, and other special features required to make it most profitable under any given set of conditions. Without obligation, a Yoder representative will call upon request and discuss such details with you.

The Yoder Slitter Book deals extensively with basic considerations in the choice and operation of slitting lines; points out, for instance, how and where a relatively small, inexpensive instal-

lation may be more economical than a larger, faster, and costlier one. (Yoder makes all types). Time studies show how coil size, strip gauge, slitter speed, coil handling and banding time affect cycle time and cost per ton.

The book is useful not only to present operators of slitting lines but to producers, users and distributors of strip and sheet metal who may be considering installing slitting equipment. A copy is yours for the asking.

THE YODER COMPANY

5510 Walworth Ave. • Cleveland 2, Ohio

Complete Production Lines

- ★ COLD-ROLL-FORMING and auxiliary machinery
- ★ GANG SLITTING LINES for Coils and Sheets
- ★ PIPE and TUBE MILLS—cold forming and welding



BEST CHOICE

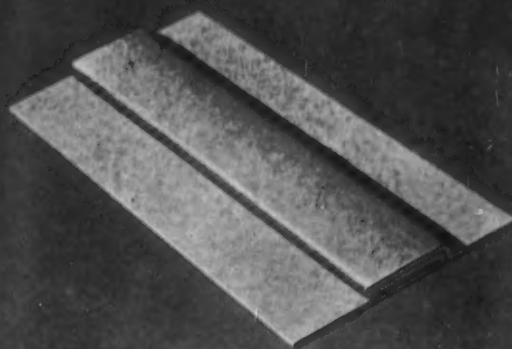
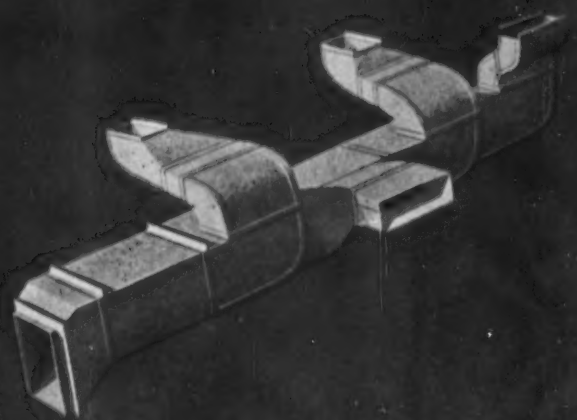
for all your
sheet metal work

WEIRTON GALVANIZED STEEL

For gutters, downspouts, air conditioning and furnace ducts, and other applications requiring a durable zinc-coated material, there's no better choice than Weirton galvanized steel—for several reasons.

Weirton galvanized steel has special qualities that stand out over the long run: A tight zinc coating that resists cracking, peeling and flaking . . . better resistance to corrosion . . . exceptional durability—all assured by Weirton's modern plant and processes, and by close control through the entire production cycle.

Next time you place an order for galvanized steel, call Weirton. Chances are we can help to make yours a better product.



**WEIRTON
STEEL
COMPANY**

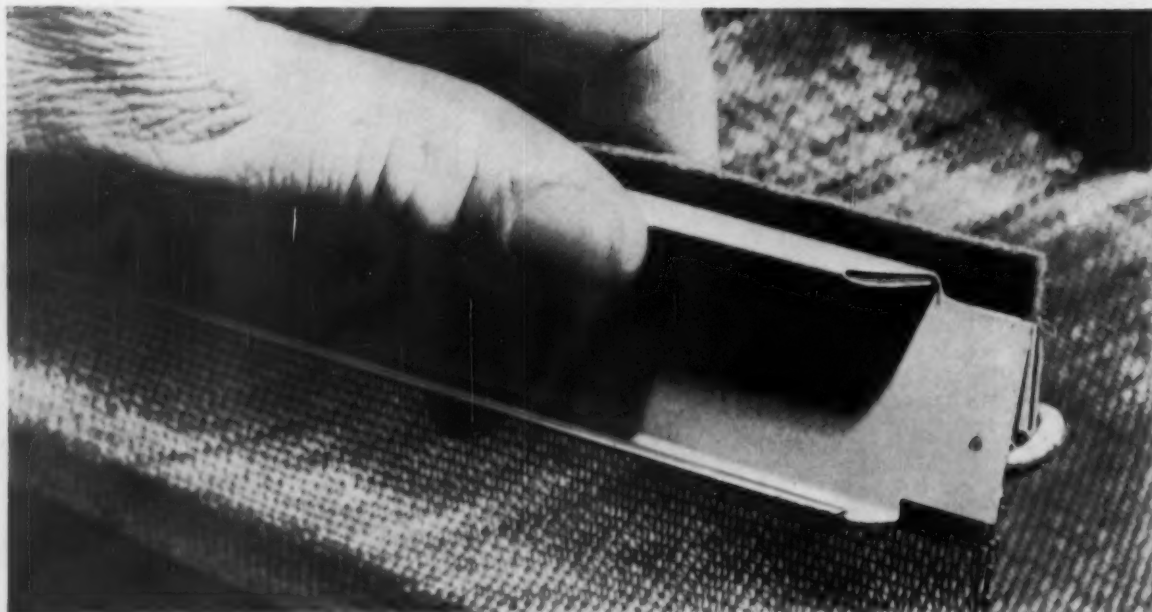
Weirton, West Virginia



NATIONAL STEEL CORPORATION



Manufacturer *Bends* Enamelstrip 180° without paint cracking!



Sharp edges on bottom bar of roll-away screen are bent back double, and the felt insect-proof seal is bent 180°. Despite severity of bends, Enamelstrip coating withstands cracking and flaking.

Pre-Coated Coil Ups Sales of Roll-Away Window Screens

A serious sales problem was easily taken care of when the Rudiger-Lang Co. in California started fabricating the exposed metal parts of its roll-away window screens from Enamelstrip coil.

Previously, stores had to put Rudiger-Lang window screens on display with the exposed metal parts unpainted. Some of the edges were bent back double, which made it impossible to paint these parts of the screens before installing them.

After changing to Enamelstrip Pre-coated Coil, however, Rudiger-Lang was able to stamp out and bend parts 180° where necessary—without worrying about the paint cracking,

chipping or flaking. The need to paint after installation was eliminated, and the sales appeal of the window screens on display increased considerably.

This story about product improvement is just one of the many that have been made possible by Enamelstrip. Today, hundreds of manufacturers are saving up to 50% on their production costs. They are feeding continuously from a coil of the exact size they need and reducing scrap losses . . . eliminating the expense of cleaning, tumbling, spraying, dipping, rust-proofing, baking, drying . . . making sure they won't be getting back any scratched or damaged products.

So why not let Enamelstrip show you how to make substantial savings on your costs? You can choose pre-coated coils in widths from 7/32 to



Some of the other products being made from Enamelstrip today include: Tags, Toys, Screw Caps, Containers, Buckles, Appliance Accessories, Lighting Fixture Parts, Picture Frames, Envelope Clips, Flashlight Batteries, Ash Trays, Movie Reels, Venetian Blinds, Electric Stoves, etc.

30 in. In steel, brass, zinc, aluminum, or any base material that takes a coating. In a wide variety of finishes. In colors from one end of the spectrum to the other. Just call or write.

THE COATED COIL CORPORATION

511 West 30th Street, New York 1 • LOngacre 5-3161

National Sales Representatives for Enamelstrip Corp., Allentown, Pa.

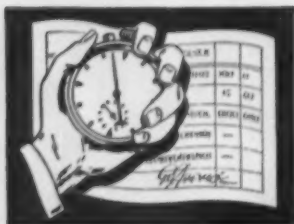




*"It's the best brand
in the land..."*

LET US TUNE UP
YOUR SPRINGS
SMALL
STAMPINGS
SPRING WASHERS
WIRE FORMS

Faster Shearing at Follansbee



The addition of a big Steelweld Pivoted-Blade Shear in the Pittsburgh warehouse of Follansbee Metals, a division of the Follansbee Steel Corporation has greatly speeded the plate service they provide.

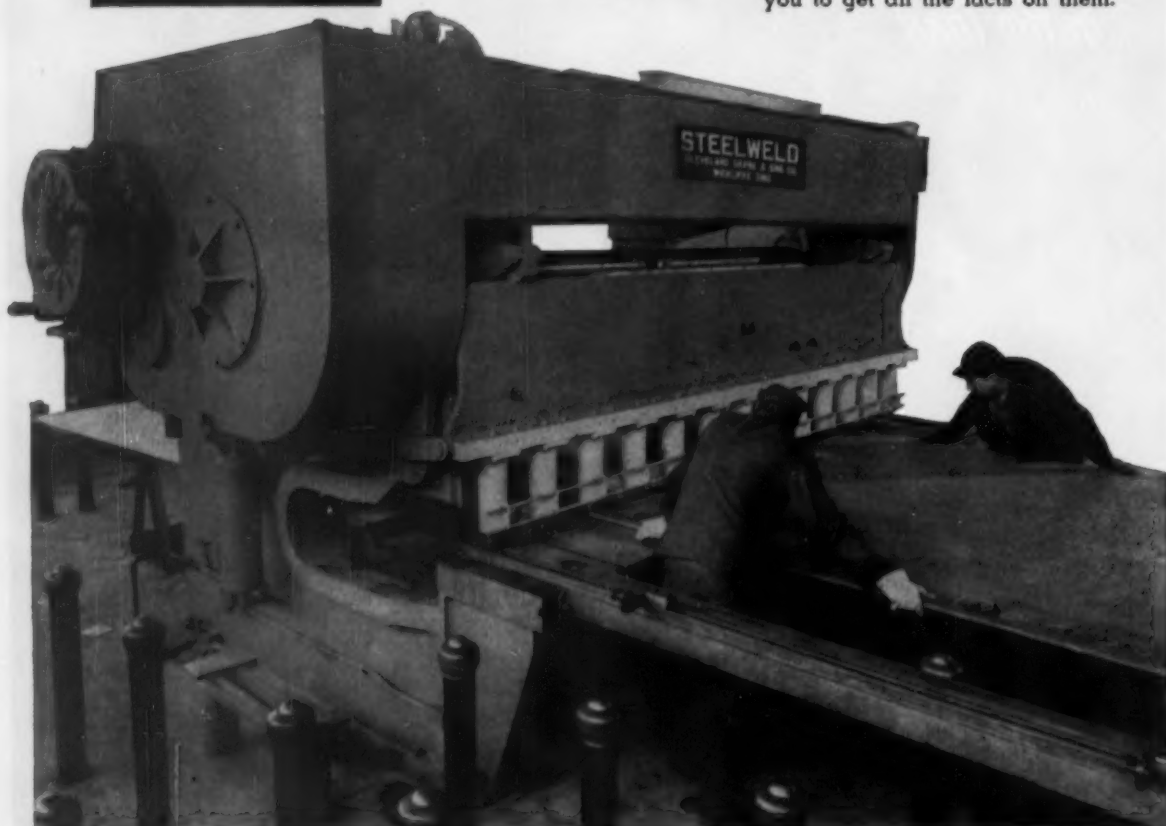
Hot rolled steel plates, stainless plates, floor plates and other metals are cut smoothly and accurately. The machine can handle mild steel up to 12'-0" x 3/4". The 36" deep throat permits slitting plates 72" wide down the middle for any length.

Because of the Micro-Set knife adjustment, it is quick and easy to properly set the knife clearance to obtain the best possible cut for every thickness. No other shear has this outstanding feature.

It was only after a thorough study of all makes of shears that Follansbee decided upon Steelweld. And it has fully proven up to expectations.

It makes the cuts as desired in metals of various characteristics. It is fast and easy to operate. All parts are readily accessible and the many adjustments provided minimize and simplify maintenance.

Steelweld Shears are the very latest and most modern on the market today with a host of points of superiority. We urge you to get all the facts on them.



GET THIS BOOK!

CATALOG No. 2011 gives construction and engineering details. Profusely illustrated.

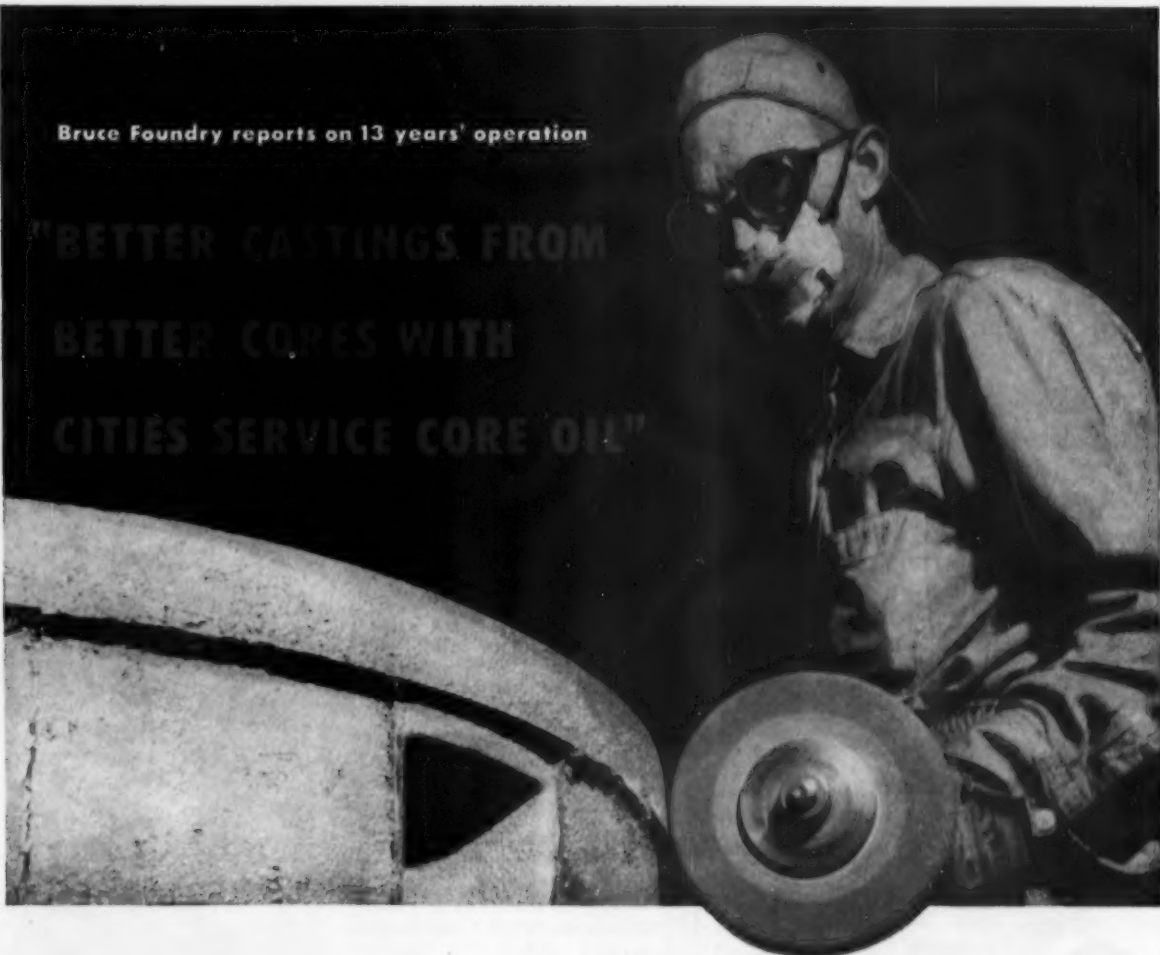
THE CLEVELAND CRANE & ENGINEERING CO.

4845 EAST 282ND STREET, WICKLIFFE, OHIO

STEELWELD PIVOTED BLADE SHEARS

Bruce Foundry reports on 13 years' operation

"BETTER CASTINGS FROM
BETTER CORES WITH
CITIES SERVICE CORE OIL"



PRESIDENT WILLIAM J. BRUCE is high in praise for Cities Service Core Oil. Says it prevents premature collapsing, eliminates sticking, permits minimum smoke and offers absolute uniformity. Great in every respect.

Located in Tecumseh, Michigan, Bruce Foundry and Mfg. Co. has a melting capacity of 30 to 40 tons per day. For many years Bruce has turned out top-notch castings for refrigeration and automotive hydraulic equipment.

And for thirteen of those years, Cities Service Core Oil has been a major factor in the quality and rapidity of Bruce's work. Probably no one is better qualified to comment on this oil than President William J. Bruce. Here's what he

says: "One of the biggest reasons I can think of for recommending Cities Service Core Oil is its absolute uniformity. This we have discovered in every single order for 13 years. As for foundry performance, I don't think there's a better oil. It has high hot strength preventing premature collapsing, yet collapses rapidly at the right time so that sand doesn't have to be dug out of castings. In addition, it eliminates sticking and permits minimum smoke."

If you'd like to learn more about the oil Mr. Bruce praises so highly, talk to a Cities Service Lubrication Engineer. Or write: Cities Service Oil Company, Sixty Wall Tower, New York 5, N. Y.

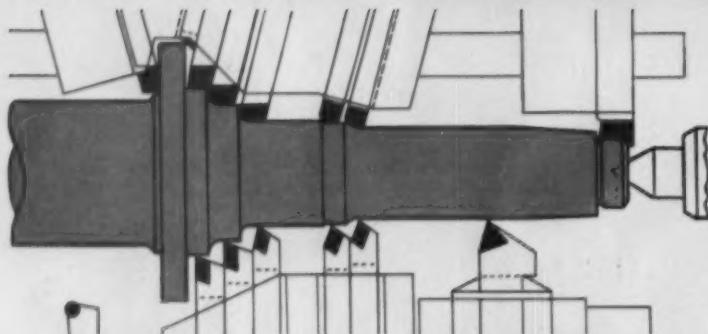
CITIES  SERVICE
QUALITY PETROLEUM PRODUCTS

AFTER REMOVAL FROM CORE BOX, sand core gets attention from skilled technician at Bruce Foundry. Firm makes castings for automotive and refrigeration hydraulic equipment, has used Cities Service Core Oil for 13 years.



January 13, 1955

THE TURNING POINT TO HIGHER PROFITS!



**PRODUCTION RATE—UP 25%, TOOL COST—DOWN 40%
AT LARGE MID-WEST TRACTOR PLANT**

PART..... Shaft Steering Clutch, SAE 6654-H Brinell 370.
OPERATION..... Rough Straddle Face Flange, turn all diameters, form undercut and base.
MACHINE..... 16 x 60 Sunstrand Automatic Lathe.
TOOLS..... 8 Talide-tipped facing, chamfering, radius and form tools Grade S-88. 7 Klamp-Lok Toolholders with round, triangular and parallelogram Talide inserts Grade S-88.
DEPTH OF CUT..... 9/32" to 7/16"
FEED..... .032
S.F.M...... 154
RESULTS..... Production up 25%—Scrap and rejects down.

A FULL LINE OF TALIDE TIPS IS AVAILABLE IN OVER 1000 SIZES, STYLES, SHAPES AND GRADES—TO MEET EVERY MACHINING REQUIREMENT



"Year after year—you can count on Talide Metal for uniform results and consistent quality"

NEW IMPROVED CUTTING GRADES

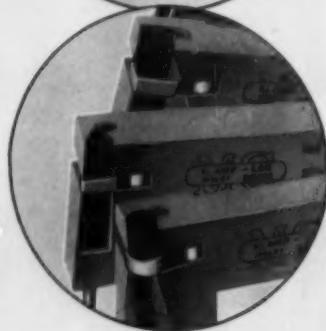
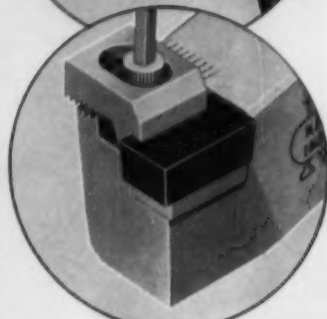
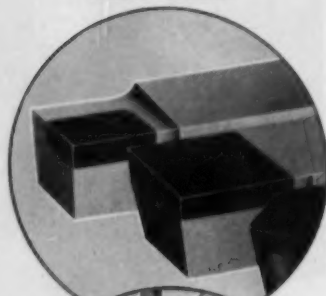
An extensive 2-year research and development program has resulted in a completely new and improved series of Talide Metal grades for all-purpose machining. "Double-carbides" containing tantalum carbide and tungsten carbide have been perfected for cutting cast iron and non-ferrous alloys, and "triple-carbides" containing tantalum carbide, titanium carbide and tungsten carbide for machining steels.

Major improvements have been made in our rigidly controlled vacuum furnace technique. This, along with additional refinements in our process has resulted in the creation of a carbide having a new, unique grain structure possessing harder and tougher properties than previous grades.

Laboratory tests reveal that these new, improved grades have 25% greater strength and rigidity. Extensive field tests have proven that service life per grind is increased up to 50% over previous grades. Metal Carbides Corporation, Youngstown 7, Ohio.

Send for new 84-page Catalog No. 55-G.

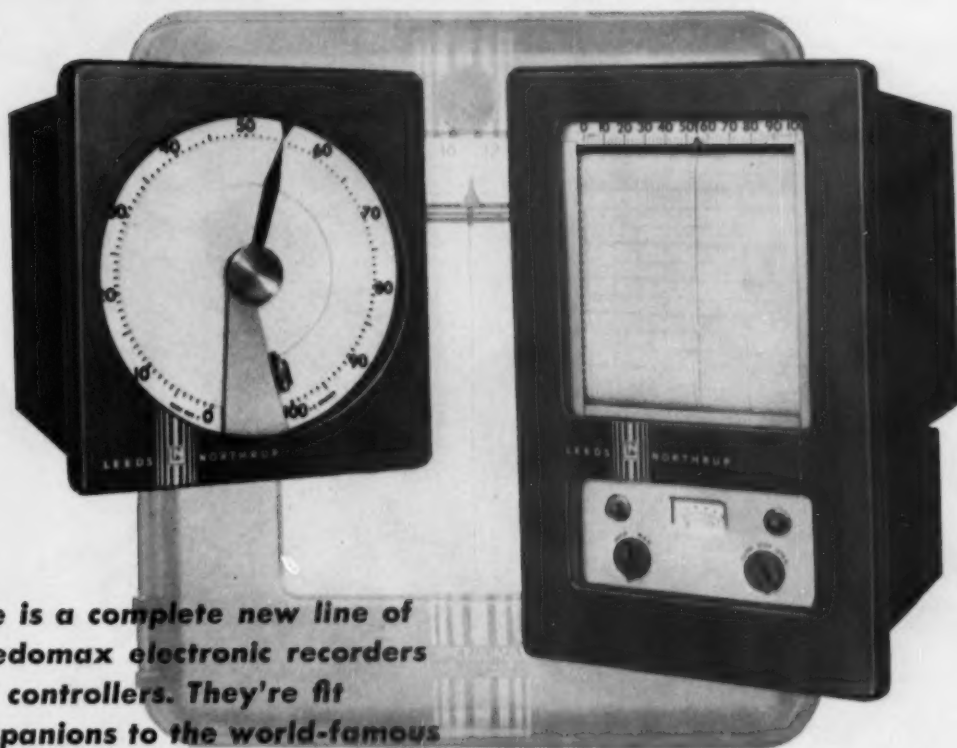
ALL-PURPOSE TALIDE TOOLS



HOT PRESSED AND SINTERED CARBIDES · VACUUM METALS
HEAVY METAL · CERMETS · HIGH TEMPERATURE ALLOYS
OVER 25 YEARS' EXPERIENCE IN TUNGSTEN CARBIDE METALLURGY

New, compact

**Speedomax® Instruments can modernize
process control in hundreds of plants!**



**Here is a complete new line of
Speedomax electronic recorders
and controllers. They're fit
companions to the world-famous
Speedomax Type G. They are called Type H.**

These new instruments can help the operation of a tremendous variety of industrial processes—including many which are perhaps now under-instrumented. And L&N's new production techniques bring Speedomax H equipments within reach of processes which couldn't formerly justify high-quality electronic potentiometers.

Especially significant to operators who now employ filled-system and deflection instruments are the benefits of electronic potentiometer performance. For instance, you can install Speedomax wherever you wish, without a thought for the distance to its sensing element. And Speedomax won't "drift" in accuracy as it ages—it stays on the job and holds the process on spec. If you damage either the sensing element or lead, you simply repair or replace on the job. Speedomax never goes back to the factory for re-calibration, so you do not need spares—thus you save both inventory and storage space.

Anyone familiar with L&N construction will see it again in Type H. The same husky components, anti-friction bearings, rigid assembly and ultra-accessability.

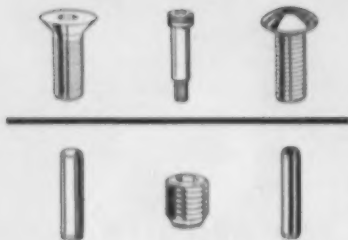
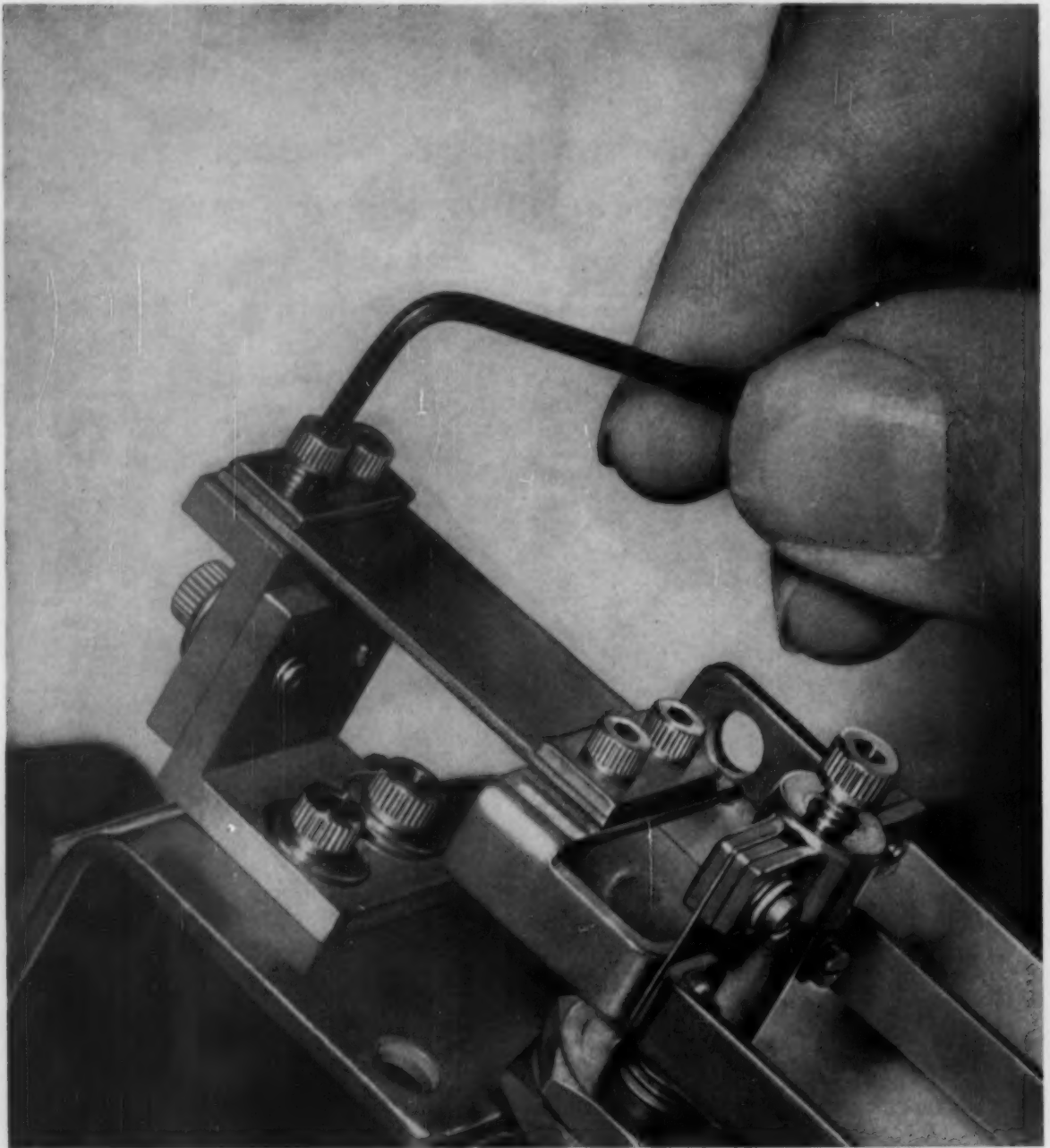
New features include a "fill-in-place" pen; a new, ingenious on-off control switch; more plug-in components. External leads go to a terminal board on outside back of case, for easy installation and maintenance.

One of the round-chart instrument's special features is its long scale; this is used both in setting the control point and for reading temperature. All instruments have especially easy, accurate means for moving the control point setter.

You can choose any type of control action—On-off; Proportional Action; Proportional with rate and reset actions. Any L&N office can supply details and application engineering assistance; or write us at 4956 Stenton Ave., Philadelphia 44, Pa.

LEEDS & NORTHROP
instruments automatic controls • furnaces

UNBRAKO AT WORK



MINIATURIZATION. Small socket cap screws make possible smaller instruments. UNBRAKO Micro Socket Cap Screws range in size from #0 to #3, from $\frac{1}{16}$ " to $\frac{1}{2}$ " in length. But they have much more than microsize to recommend them. They are so strong that three UNBRAKOS will do the job of five ordinary cap screws. Or, if you must use the same number of screws, you can safely use smaller UNBRAKOS. All UNBRAKOS have knurled heads for easier handling and faster assembly, and uniform sockets for maximum wrench engagement. Your favorite industrial distributor always stocks UNBRAKOS. STANDARD PRESSED STEEL CO., Jenkintown 17, Pa.

UNBRAKO

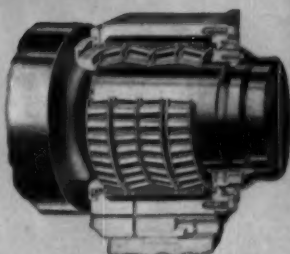
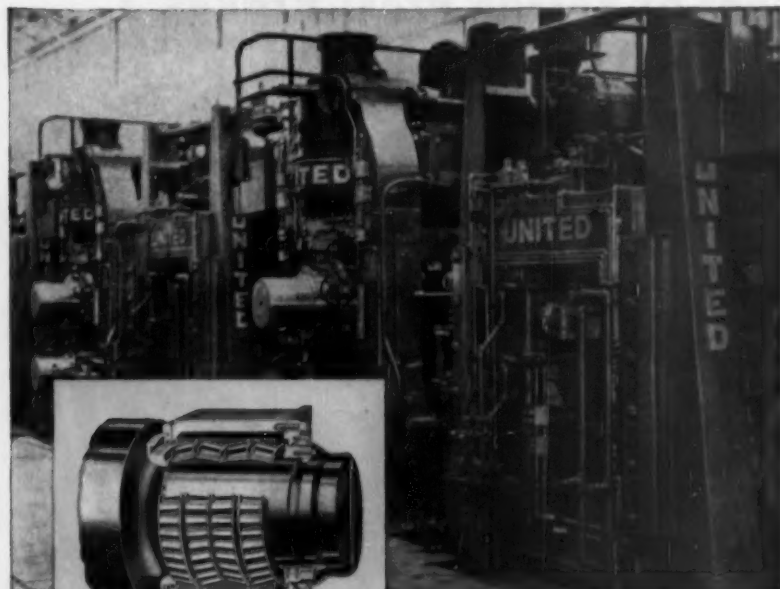
SOCKET SCREW DIVISION

SPS

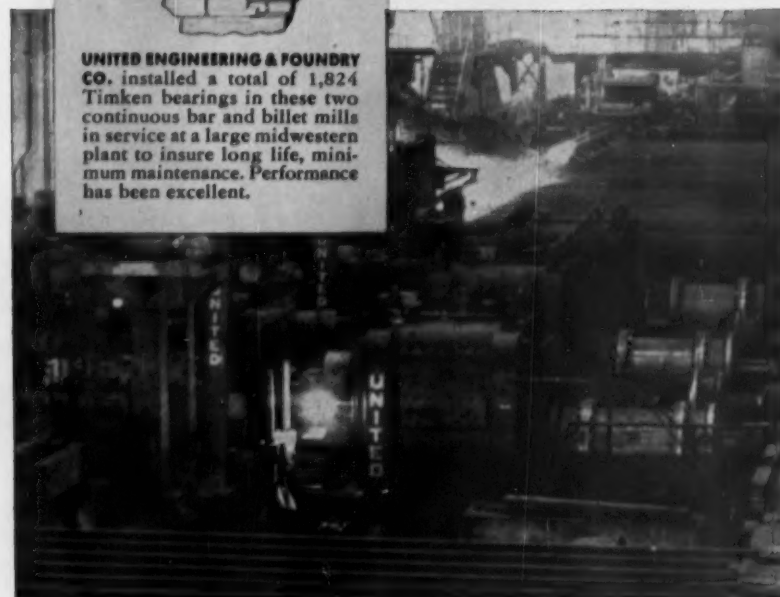
JENKINTOWN, PENNSYLVANIA

1,824 TIMKEN® bearings in two United mills!

Result: constant pass alignment, simplified lubrication



UNITED ENGINEERING & FOUNDRY CO. installed a total of 1,824 Timken bearings in these two continuous bar and billet mills in service at a large midwestern plant to insure long life, minimum maintenance. Performance has been excellent.



SEVERAL years ago, United Engineering built these two modern high-speed 20" x 36" and 30" x 48" continuous bar and billet mills with alternate vertical and horizontal stands for a big midwestern steel producer. All told, they used 1,824 Timken® tapered roller bearings in the two mills—on the roll necks, in the drives, on the run-out tables and in other vital applications.

Timken roll neck bearings permit maximum roll neck size and provide greater mill rigidity. Higher rolling speeds are possible. Mills can be started or stopped without loss of steel. Pass alignment is accurately maintained by Timken roll neck bearings *without* the use of auxiliary thrust bearings. Due to their tapered construction, Timken bearings take radial and thrust loads in any combination.

With Timken bearings there are no complex lubrication systems for roll neck bearings. They use simple economical grease lubrication. This eliminates a possible source of trouble, speeds up roll changes, reduces maintenance.

Here are more significant bearing facts to consider: Timken bearings have extremely low frictional resistance due to their true rolling motion and *incredibly* smooth finish. They have extra load carrying capacity due to full line contact between rollers and races. They hold shafts and housings concentric, making closures more effective; dirt stays out, lubricant stays in.

When you buy equipment, look for Timken bearings. When you build equipment, look into Timken bearings. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian Plant: St. Thomas, Ont. Cable address: "TIMROSCO".



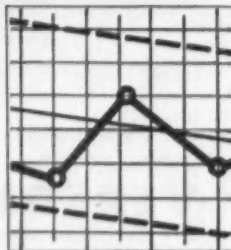
This symbol on a product means its bearings are the best.



TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS



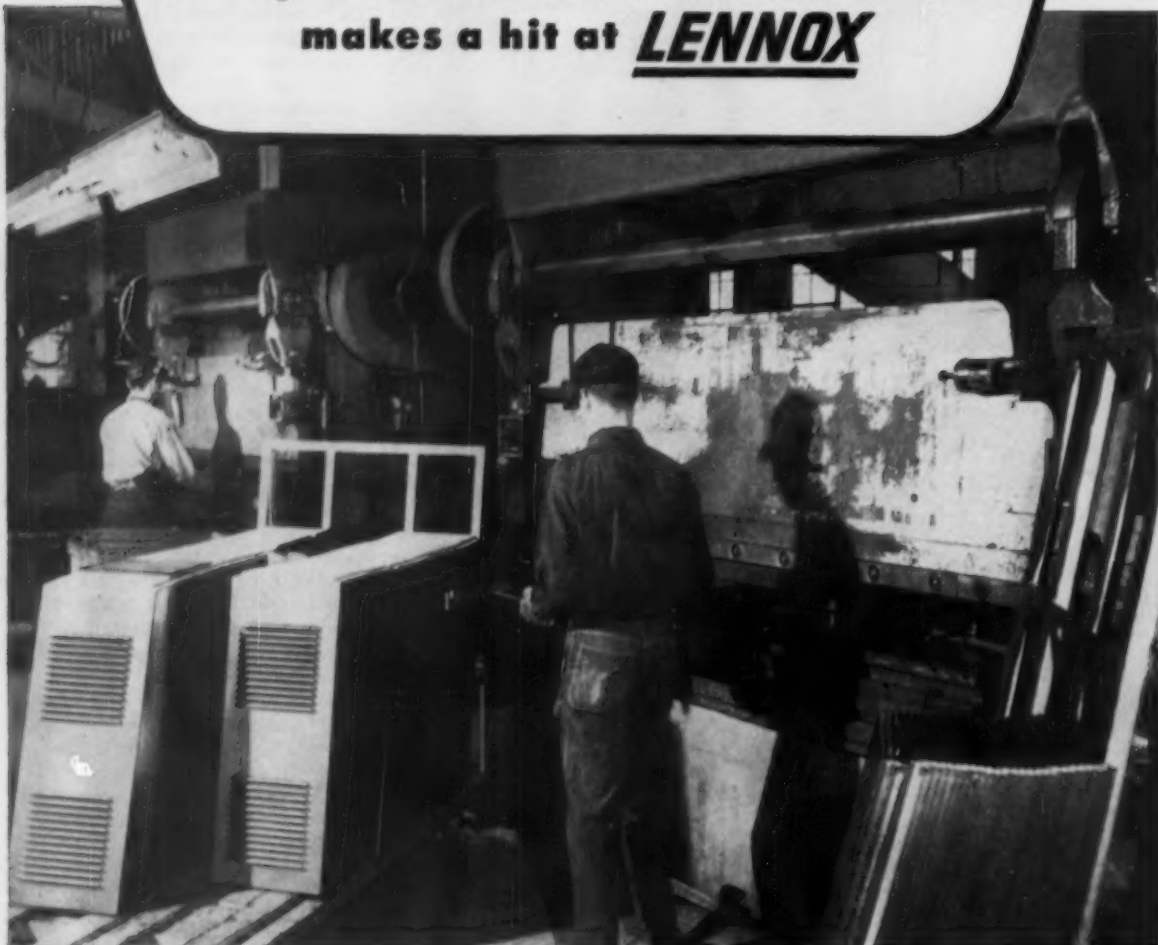
STATISTICAL QUALITY CONTROL

To insure uniform high quality and closer tolerances, the Timken Company uses statistical quality control. With it, tolerance deviations are plotted graphically. It's one of industry's newest, most scientific methods of improving product uniformity.

NOT JUST A BALL NOT JUST A ROLLER THE TIMKEN TAPERED ROLLER BEARING TAKES RADIAL AND THRUST LOADS OR ANY COMBINATION

January 13, 1955

**The accuracy, dependability and ease
of adjustment of Verson Press Brakes
makes a hit at LENNOX**



Catalog B-51 gives complete design details and specifications for Verson Press Brakes. Write for your copy, today.

"World's largest manufacturer of warm air furnaces" is the description applied to The Lennox Furnace Company, Marshalltown, Iowa. And Mr. Harold Bragg, Lennox factory manager, sums up better than we can the part Verson equipment plays in the Lennox picture: "We have several Verson all steel press brakes in the shop which have given us excellent service in that they require a minimum of maintenance plus eliminating costly downtime. They are sturdily built of welded steel construction which assures continued alignment of the bed and ram. The machines are easy to keep in adjustment, therefore avoiding costly mistakes in production."

Here's one man's experience . . . now find out what Verson equipment can do for you. Call your Verson dealer, today.

A Verson Press for every job from 60 tons up.



ORIGINATORS AND PIONEERS OF ALLSTEEL STAMPING PRESS CONSTRUCTION

VERSON ALLSTEEL PRESS CO.

9314 S. KENWOOD AVENUE, CHICAGO 19, ILLINOIS • 50. LAMAR AT LEDBETTER DRIVE, DALLAS, TEXAS

MECHANICAL AND HYDRAULIC PRESSES AND PRESS BRAKES • TRANSMAT PRESSES • TOOLING • DIE CUSHIONS • Verson-WHEELON HYDRAULIC PRESSES

The Iron Age Newsfront

Merger Result: \$15 Million Saving

American Motors saved over \$15 million in tooling costs by integrating manufacture of Nash and Hudson cars. Six series of Nash, Hudson and Rambler cars are now assembled on a single assembly line.

Steel: Buyers Turn to Warehouses

Filled order books are bringing back a few major warehouse customers. One eastern warehouse in December sold 135 tons of hot rolled products at full warehouse price to one customer on a single order. Note: Inability to get mill delivery at year's end was a key factor in the premium price, immediate delivery sale.

Magnets Help Protect Pipe

Permanent magnets have solved some troublesome material flow problems in a small Eastern pipe mill. Other advantages include elimination of damage to galvanized pipe due to slippage on conveyor and solution of hold-down problem on small sizes in one operation. Also, conveyor length in one instance was cut in half due to more positive holding action of magnetic roll.

Light Weight Passenger Train Ready

At least one production model light weight passenger train will be a completed project in 1955. Tooling for the job is already under way.

Lighter Freight Cars Draw Interest

Interest in the light weight freight car with a capacity of about half that of the standard freight car, continues to grow. At least one road is exploring the use of light weight cars. Reasons: (1) Too many cars are making long hauls carrying a fraction of their load capacity. (2) Cars can be more easily controlled in humping yards.

Films Help Push Industry Sales

Indirect selling via the industrial film, regarded with increasing favor over the past four years

by sellers or components as well as consumer goods, gives indications of a big step forward in 1955. A strong source will be petrochemical and chemical production, with one producer already signed for a film a month for the coming year.

Buy Scrap To "Sweeten" Melts

Despite high scrap inventories some steel producers are finding it necessary to buy additional tonnages. Reason: Increasing importance of quality in finished steel products. New scrap is being used to "sweeten" melts, particularly those ending up as sheets where rejects for quality reasons are a factor.

Mill Scale: Paint Over Or Not

Some authorities are questioning advisability of painting over mill scale. These sources contend scale flakes off, leaves metal unprotected and leads to early trouble. This is contrary to belief of other experts that scale provides a good base for paint.

Shell Molding: American Machine At Work

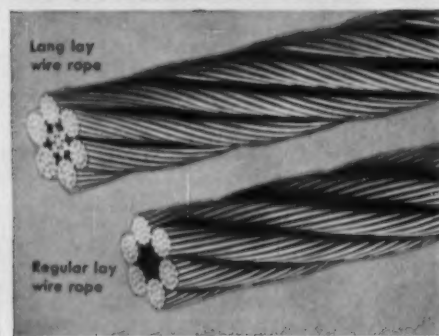
An American-designed shell molding machine will soon be used in Germany, home of the shell molding process. The estimated production rate of the American machine is more than twice that of the best German shell molding machine.

Thrust Spoiler Brakes Jet Planes

A recently developed "thrust spoiler," mounted in the tailpipe of the jet engine, deflects the gas before it passes through the jet exhaust nozzle. This reduces forward thrust of the engine, acting as a brake for jets.

How Much Marginal Steel Capacity?

Estimates of obsolete and/or marginal steel capacity range from 10 to 25 million tons. Much of this capacity would have been scrapped if it were not needed for defense reserve. This means the current 80 pct operating rate is virtually 100 pct of civilian capacity.



What extra good will Leschen Lang lay wire rope do for you?

Look at a length of Lang lay wire rope. Compare it with regular lay. Notice that the *wires* in Lang lay rope twist in the *same* direction as the *strands*. In regular lay rope these directions are opposite.

What does that do? It makes the exposed length of the outer wires in Lang lay rope about twice as long as in regular lay rope. It has extra bearing surface to withstand wear from scuffing, rubbing and other abrasive action. Also, because Lang lay wires and strands are laid in the same direction, the rope has greater flexibility.

What's the result? Simply this—on some types of duty, where abrasion and bending stresses are abnormal, Leschen Lang lay rope definitely lasts longer than regular lay. Replacements are fewer. Costs are lower. And, with Leschen you are assured of *higher-than-rated quality for longer-than-expected wire rope service.*

Can you use these benefits? To make sure, ask your Leschen man. Leschen makes all types of Red-Strand wire rope for all types of jobs, and can help select the best one for you. Perhaps you *should* use Lang lay. Talk to him soon.

LESCHEN
WIRE ROPE



Depend on Leschen's higher-than-rated quality for longer-than-expected service.

LESCHEN WIRE ROPE DIVISION

The Watson-Stillman Company
(A SUBSIDIARY OF H. K. PORTER COMPANY, INC.)
St. Louis 12, Missouri





DO-IT-YOURSELF: Still Booming

Home repairs, alterations and additions cost \$7 billion in '54 . . . Do-it-yourself tools accounted for \$14 million . . . Materials account for half in 5-month period . . . See rise—By N. R. Regeimbal.

♦ **HOMEOWNERS**, with more money to spend in 1955, will continue to boost the do-it-yourself market, the government predicts. Just how big it may be is indicated by Census Bureau figures and estimates for the year just ended:

Almost all of the 25 million homeowners spent some money in repairing, altering or adding to their properties in 1954, and total expenditures for material and labor probably ran around \$7 billion.

In the first 5 months of last year, 70 pct of the homeowners—18 million—spent a total of \$3 billion for home fix-up, of which \$1.5 billion went for materials. Average expenditure for the period per house was \$61. But the amount being spent increased for each month of the test period, and probably hit a much higher figure during the warm summer months.

Expenditure for tools for the do-it-yourself market was about \$14 million for both purchases and rentals.

Most on New Homes

Farmers, the report shows, spent about the same average per home as their city-dwelling neighbors, but spent considerably less hiring professionals to do their work for them.

An interesting fact revealed by the fix-up survey is that the highest amount spent for alterations and additions was for houses most recently built, and was correspondingly lower for each age group back to 1930, when the average increased again.

Largest expenditures during the test period were for houses built since 1939. A factor was believed to be the trend for houses with "expandable" basements or attics, which the homeowners begin completing soon after taking possession.

An analysis of the boom in the fix-up and do-it-yourself market points up these trends:

(1) Increased home ownership—55 pct of the homes are now owner-occupied, compared with 44 pct in 1940.

(2) Increased leisure time, higher wages, and higher prices for contract labor.

(3) The "flight to the suburbs" and the resulting trend to out-

door living produce demand for garden tools and outdoor products.

(4) Larger families, and younger families.

(5) Relaxed mortgage terms which make major projects easier to finance.

Analyze Market

The market for power tools has grown as the number of home workshops has grown. In 1953, it was estimated there were 11 million homes with workshops—almost one out of every two homes. Redesign products to suit this market, together with increased availability of plans, drawings and guides for a wide variety of

How To Promote Do-It-Yourself

Here's how you can help your distributors and retailers boost their sales:

Things to do:

- Set up a program to train salespersons to answer the questions frequently asked by prospective customers. These might include basic design, construction methods, proper use of your tools or how best to use common tools on your materials.
- Offer how-to-do-it pamphlets and other promotional material.
- Supply display fixtures to your dealers.
- Check with manufacturers of complementary tools or materials for possible tie-in display.

Things you can suggest to your dealers:

- Coordinated displays of tools, materials, instruction and plan books as well.
- Actual demonstrations in the retail shop. Tools should be set up and ready for working demonstrations at all times for this.
- Rental programs providing for reduction of the selling price by the amount of rental if purchase is made within appropriate time.
- Hobby shows and contests in making furniture or various other common items.

products, have turned the power tool business into a mammoth industry.

One dealer in Cincinnati reported he billed for \$28,000 worth of rentals for tools, waxers, polishers and sanders. Market for various types of power tools is indicated by the following:

(1) The multipurpose bench tool has increased in sales volume from approximately \$2.25 million in 1948 to about \$24 million in 1953. Prime benefits are the space-saving features and the initial economy.

(2) Single-purpose bench tools—arbor saws, drill presses, band saws, jig saws, jointers, sanders, grinders, shapers and lathes—increased in sales from \$15 million in 1946 to about \$40 million in 1953.

(3) Sales of portable electric tools have increased from \$6 million in 1946 to about \$95 million in 1953.

Hand tools naturally make up a large percentage of the number of tools in any workshop. Officials estimate that a well-equipped workshop might represent an investment of several hundred dollars in hand tools of all kinds.

Aluminum Tries It

Average annual sales per household of lumber and building materials for home activities are estimated at over \$60. The plywood industry, recognizing the market potential, has been particularly active in promoting the market with dealer selling aids, a self-selection panel rack, and plans for making hundreds of products.

Aluminum has been another industry to recognize the tremendous potential of the do-it-yourself market and has specially engineered for use with standard woodworking hand or power tools aluminum sheets, rods, tubes, bars and strips, and provided dealer aids. Although introduced only last year, sales are already estimated at several million dollars.

Gardening supplies and equip-

ment of all kinds, spurred by the move to the suburbs, totaled about \$700 million, up \$200 million since 1947. Lawnmower sales alone account for about \$100 million a year, 20 times the 1940 rate.

Aluminum:

**Reynolds Metals boosts pig.
ingot prices 1¢ per lb.**

In a move that took the trade largely by surprise, Reynolds Metals Co. last week announced that it was raising standard grade aluminum pig and ingot prices 1¢ per lb.

Basic reasons behind the move were that existing prices were not in line with high expansion costs. And the tightening Free World market has turned to the U. S. more heavily since the recent 0.75¢ increase by Aluminum Co. of Canada. This latter increase applied in all of Alcan's markets except the U. S.

For further details, see p. 118.

Shifting pattern of U. S. imports and exports (former dwindling and the latter, especially in scrap, sharply rising) plus the Alcan boost prompted THE IRON AGE to contact Aluminum Co. of America only a week ago regarding the possibility of a domestic increase. Answer was a definite negative.

But then, only 2 days later, Reynolds moved. Alcoa's most recent statement, as we go to press, is that the Reynolds increase is being studied and that Alcoa will shortly make a definite statement

as to whether or not it will raise prices. Kaiser Aluminum & Chemical Co. was in a similar position.

It seemed, however, a virtual certainty that both Alcoa and Kaiser would follow the Reynolds move—the only question was how quickly they could get their price books rewritten.

The Reynolds increase was made effective with new orders acknowledged on or after Jan. 10 or on Feb. 10 with orders acknowledged prior to Jan. 10. It puts the price of standard pig at 21.5¢ per lb and standard (99 pct plus) ingot at 23.20¢ per lb.

A Reynolds spokesman also indicated that prices for alloy ingot and mill products would shortly be increased.

British Extend Exports

The British Token Import Plan, under which U. S. manufacturers may export to the United Kingdom token shipments of specified commodities otherwise prohibited, will remain in effect during 1955.

U. S. Bureau of Foreign Commerce says eligible participants will be permitted to make shipments under the plan in amounts not exceeding 30 pct of the firm's average annual exports to the U. K. during 1936-37-38.

Ten items, dropped from the approved Token Plan list in 1947, are restored in the 1955 agreement. Included are outboard motors, portable electric generators, and specified types of manufactured iron, steel, aluminum, electrical apparatus, agriculture and garden machinery, photographic goods, office supplies and sporting goods.

Fabricated Structural Steel

Contracts, Shipments, Backlog

	1954	1953	Estimated Net Tons Avg. 1947-50
CONTRACTS CLOSED			
November	193,405	153,514	194,380
Year to Date	2,309,827	2,582,364	2,162,128
SHIPMENTS			
November	226,496	257,844	182,249
Year to Date	2,909,286	2,850,785	2,057,157
BACKLOG	1,280,348	1,804,079	1,407,149

Source: American Institute of Steel Construction

Charles M. White

Sees Better Steel Year In '55

Republic president expects 7-8 million ton gain . . .

Expects early softness in demand from oil, gas industries . . .

Predicts consumption, production will balance.

Q. How will 1955 compare with 1954 for overall steel industry output?

A. We believe that the actual consumption of steel in 1955 will be approximately the same as in 1954. This means that the mills will operate at a somewhat higher rate because inventories will be maintained rather than cut. The increase would appear to be somewhere in the neighborhood of 7 or 8 million tons more ingots than in 1954.

Q. In which markets do you expect liveliest activity?

A. Among steel-consuming markets, we see construction continuing as the most active. Not only do we expect both residential and commercial construction to continue at the high rate of activity of previous years, but probably to increase. This increase should be substantial enough to counteract any slight reduction in industrial construction and steel consumption for producer or consumer durables which might occur.

Right now the oil well and gas industries are correcting their inventory situation and the pipe business is at a very low ebb. Pipe was bought from Germany, Belgium, England, any place it could be found, and all the pipe possible was salvaged from old wells and old lines. It's really no wonder that a tremendous inventory was accumulated. On the other hand, once it was found that prompt deliveries were available from the mills, oil field operators proceeded immediately to liquidate inventories. Consequently, for the first quarter we think this inventory adjustment will still be in process and the oil

and gas field business will be relatively poor compared with the rest of our business.

Q. How can the industry minimize inventory re-adjustments such as this year's?

A. The steel industry can only minimize inventory readjustments by being practical in purchasing requirements and by being realistic in estimates but, after all, this is going to be very largely a mass psychology situation. When things get scarce people buy and the moment materials are in ample supply they stop buying. The inventory reduction which took place in 1954 means that steel consumption and production during 1955 will be somewhat more closely related. During 1954 some of the steel that was fabricated was taken out of inventory and mill production lagged behind steel consumption. Steel inventories in the hands of manufacturers are now at a point that further inventory reduction is not in the cards. We can expect that steel production and consumption will be approximately equal during 1955.

Q. Do you feel the steel industry will launch any additional expansion programs? If so, in which products?

A. I doubt that additional expansion programs, so far as ingot capacity is concerned, will be launched in 1955. There will, of course, be the usual rounding out and replacements, plus expenditures for special products. Galvanized sheets, tin plate, and building materials are almost sure to grow.

Q. What are the prospects for a



**Charles M. White, Pres.
Republic Steel Corp.**

possible steel strike during 1955?

A. I doubt very much that there will be a steel strike in 1955. I am rather appalled even to think of any demands coming on top of the high pay and terrific fringe benefits which our men are now getting.

Q. How will Republic Steel fare in 1955?

A. We think the year ahead will be a good one for Republic Steel. There is a substantial demand for most of our products although as we approach the new year a few items such as gas transmission pipe and oil country goods do not appear in great demand. Since the drilling program is continuing at a high rate, this is undoubtedly a temporary situation.

Q. What impact do you expect German rearmament will have on the United States steel industry?

A. I would expect the rearming of Germany to be of some benefit to the U. S. steel industry because steel which Germany has been exporting will, to some extent, go into armaments.

Q. What will continued exporting do to U. S. scrap prices?

A. Scrap prices will certainly go up with the continued exportation of U. S. scrap, especially if it is in the volume of the last 6 months.

RAIL: Buying Starts Long Haul Up

Railroad steel purchases are moving up again, after a year-long slide . . . There's no doubt roads want to buy, but earnings haven't been good . . . Thing to watch is carloadings—By K. W. Bennett.

♦ RAILROAD steel purchases, after a year-long slide, are moving up. As a result, some steelmakers are putting more ingot steel into products destined for the railroad market—plate, structural, and rail.

There is no doubt that first quarter rail procurement by the roads will climb well over the fourth quarter 1954 tonnage shipped. Rail shipments fell almost steadily from a January high of 170,000 tons to a low 52,000 tons in October.

It's a positive bet that 1954 rail shipments will total 1,200,000 tons. The annual total hasn't been that low for standard rail since 1943. The tonnage represents 65 pct of the 1953 total, and despite some opinion to the contrary, at least part of it represents carryover 1953 demand.

Buying More Rails

A large road which plans to reduce 1955 rail purchases beneath the 1954 level by 40 pct, will nonetheless boost January rail purchases over the December figure by four times.

Another, planning to use as much rail in 1955 as it did in 1954, will similarly boost January intake over December by at least three times, probably four. Among four

medium and small roads serving similar areas, only one will not boost January rail buying. Intake of some January rail in December by several roads shouldn't affect the jump.

Watch Carloading

Current planning would make the bulk of buying fall in first half 1955, with a tailing over into third quarter as Northern roads with later building seasons continue laying through the summer months, and would make the total 1955 tonnage run at the 1954 level despite a few dismal reports from roads with virtually no tracklaying plans.

Offsetting a dark forecast is one of the biggest question marks of the 1955 market scene, and it has carbuilders, railmakers, and railroadmen alike using every divining aid short of the willow rod. Will, as the shipper's forecast says it will, the carloading rate hold up through first quarter and into second? With a solid advance in rail for first quarter almost a certainty, an advancing carloading rate would flush out railroad dollars that are currently in the suspense file. At least two major roads, with an advancing January and February carloading rate, could be expected to advance both

rail and carbuilding purchases. The effect will be to push on into third quarter a rail demand that thus far is concentrated strongly in first half.

The same is true for carbuilding. Without the demand backlog that sustained rail in at least the first 2 months of 1954, carbuilders entered 1954 with a backlog that had fallen from 109,174 units at the end of 1950, to 30,703 at the end of 1953.

It's been estimated that railroad earnings fell by 33 pct in 1954, improvements fell off by 36 pct, and the new car installations fell to 29,000. The backlog of freight car orders shrunk to 12,853 cars by November. For an industry that has called 80,000 cars an excellent year, and 60,000 cars an average year, last year's performance was sour. There are current signs pointing to a 35,000 car year.

Meantime, carbuilders are taking more plate and structural. At least one steel producer feels that his only improvements in plate tonnage thus far has come from a freshet of carbuilding orders. One car builder could, as of last week, push through first half at 50 pct operations, though this is certainly not the average. Some evidence of a cutback in December buying is

Railroad Buying vs. Carloadings—1949-1954

Freight Cars on Order at End of Year	Freight Cars Delivered for Service, During Year	Tons Steel Shipped for Rail Transportation	Rail Tonnages Shipped, Standard Rail	Carloadings in Calendar Year
1949—12,861	80,815	3,655,000	1,733,000	35,911,261
1950—109,174	40,032	4,299,000	1,705,000	38,902,641
1951—104,831	86,827	5,782,000	1,699,000	40,499,182
1952—67,138	64,347	3,986,000	1,204,455	37,965,000
1953—30,703	67,548	4,787,000	1,886,546	36,303,000
1954—13,639 (end, Nov.)	29,000	2,600,000 (est.)	1,200,000 (est.)	33,740,000 (est.)

Sources: AAR, AISI, and Assn. of Western Railways.

being generally disregarded by suppliers of components and raw materials, has been unnoticed by a few.

Will Carryover Rails

Suppliers and railroadmen themselves aren't comfortable about appraising the 1955 outlook. Here are some of the reasons:

Steel buying isn't the most reliable indicator. There's been at least some inventory building among car builders. Not all buying has been for current use.

Carryover rail, though not generally a factor, is held by some railroads. One road is carrying over about 10,000 tons, another reportedly has 20,000 tons. Overall, carryover rail is not a strong factor but will reduce purchases, as presently planned, by as much as 40 pct in the case of one road.

Freight car retirement forcing roads to buy new equipment has been pointed out as a possibility as the surplus car reserve is reduced. Though the reserve is currently low, oldtimers are quick to counter that in the '30's, when cars got just as tired, they had a trick of hanging on a little longer. Freight car retirement is a factor, but can't be judged easily in its effect on new car purchases.

No Doubt of Need

The final question: how will carloadings look at the end of first quarter?

There's no doubt that railroads want equipment. A well-seasoned rail seller told THE IRON AGE, "Sure, they'd like to buy. Given the freedom to do what they like to the rails, I think we'd have 5 years of 2 million ton rail years. But they're buying short, and that includes capital equipment. They're seeing that they'll have income before they'll decide on outgo."

Said a component supplier, "This, for us, has been the worst time we've had since the '30's. Worse than '49. Then we had a backlog. This time, 1954, we didn't. But we're picking up again. We're counting on February for a real gain. We're optimistic."

Another component producer. "We're going up in 1955 over 1954. Maybe I'm optimistic, but I'd say by at least 10 pct."

Still another component pro-

ducer: "It's better but we figure the real pickup will begin in March."

A rail producer: "We're scraping for orders, but we'll double our December tonnage in January. That's not saying much tonnage-wise, but I will say that we won't hit a peak until March, April, and May."

It's no boom, but railroad buying is strengthening.

Containers:

Producers look forward to banner year.

Producers of industrial containers view business prospects this year with considerable confidence, a U. S. Commerce Dept. field office survey shows.

Manufacturers are looking for-

ward to the opportunity to exceed container output in 1954, when the over-all volume was only about 5 pct below the record reached in 1953.

A review of container and packaging operations in the third quarter 1954 shows a marked variation in output records of the various production fields.

Ship More Caps

For example, metal cap shipments were nearly 7 pct heavier than in the third quarter 1953, but steel barrel and drum shipments dropped by 5 pct. Shipments of steel packages, kegs, and pails declined 0.2 pct.

Metal can shipments were 3.5 pct lower, while shipping sack paper output was 3.7 pct heavier and production of paper milk containers increased by about 13 pct.

STEEL: What Mills Shipped in November

As Reported to the American Iron and Steel Institute

STEEL PRODUCTS	NOVEMBER 1954				Pct of Total Shipments	YEAR TO DATE				Pct of Total Shipments
	Carbon	Alloy	Stainless	Total		Carbon	Alloy	Stainless	Total	
Ingot	12,148	13,252	1,452	26,852	0.5	160,808	123,241	17,381	301,431	0.6
Blooms, slabs, billets, tube rounds, sheet bars, etc.	111,402	31,484	940	143,826	2.8	1,034,486	297,522	12,947	1,344,955	2.3
Strip	11,508			11,508	0.2	120,557			120,557	0.2
Wire rods	78,043	1,889	448	80,180	1.5	662,849	13,039	4,179	680,067	1.2
Structural shapes (heavy)	327,719	8,427		331,148	6.3	4,126,414	27,511	78	4,154,001	7.2
Steel piling	30,888			30,888	0.6	358,958			358,958	0.6
Plates	378,718	17,886	1,713	398,317	7.6	4,708,386	167,425	15,794	4,910,614	8.6
Flats—standard (over 80 lbs.)	43,474			43,474	0.8	1,077,441	112		1,077,553	1.9
Flats—all other	5,942			5,942	0.1	79,071			79,071	0.1
Joint bars	2,562			2,562	0.1	62,480			62,480	0.1
Tin plates	6,828			6,828	0.1	230,861			230,861	0.4
Track spikes	2,580			2,580	0.1	62,903			62,903	0.1
Wheels (rolled & forged)	15,888	181		15,837	0.3	177,732	1,313		179,045	0.3
Axles	5,429			5,429	0.1	84,503	133		84,636	0.1
Bars—hot-rolled (incl. light shapes)	424,151	139,801	2,952	576,904	11.0	4,367,364	1,236,180	31,086	5,634,630	9.8
Bars—reinforcing	139,825			139,825	2.7	1,428,283			1,428,283	2.8
Bars—cold finished	88,313	17,433	3,710	109,456	2.1	893,653	188,783	26,170	1,088,606	1.9
Tool steel	860	8,170		7,188	0.1	11,448	68,234		79,682	0.1
Standard pipe	187,443	147		187,590	3.6	2,182,873	472	8	2,183,353	3.7
Oil country goods	128,899	34,366		163,265	3.1	1,826,918	308,118		2,135,036	3.7
Line pipe	182,872			182,872	2.9	2,824,421	16		2,824,437	4.4
Mechanical tubing	42,385	13,020	280	55,685	1.1	453,331	154,007	3,822	610,860	1.1
Pressure tubing	15,482	2,904	1,150	19,536	0.4	198,724	43,649	15,852	258,225	0.4
Wire—drawn	214,317	2,944	2,100	219,361	4.2	2,187,331	28,400	17,940	2,233,671	3.8
Wire—nails & staples	43,881		4	43,885	0.8	538,720		8	538,728	1.0
Wire—barbed & twisted	6,010			6,010	0.1	126,442			126,442	0.2
Wire—woven wire fence	14,607			14,607	0.3	285,686			285,686	0.5
Wire—bare tice	1,805			1,805		86,123			86,123	0.1
Blackplate	48,950			48,950	0.9	628,806			628,806	1.1
Tin & terneplate—hot dipped	63,034			63,034	1.2	1,238,116			1,238,116	2.2
Template—electrolytic	190,420			190,420	3.8	3,479,875			3,479,875	6.0
Sheets—hot-rolled	982,421	20,953	1,731	1,005,105	11.7	5,295,607	174,359	12,796	5,482,762	9.4
Sheets—cold-rolled	943,470	3,327	9,148	955,945	18.3	8,373,959	39,512	88,981	8,502,452	14.7
Sheets—galvanized	195,183	7		195,190	3.7	2,186,280	791		2,187,071	3.8
Sheets—all other coated	10,699			10,699	0.3	156,691			156,691	0.3
Sheets—enameling	17,928			17,928	0.3	181,688			181,688	0.3
Electrical sheets & strip	9,352	46,770		56,122	1.1	82,213	454,198		536,411	0.9
Strip—hot-rolled	141,930	2,002	271	144,203	2.8	1,301,441	21,898	3,168	1,326,507	2.3
Strip—cold-rolled	107,326	1,868	17,178	125,368	2.4	994,440	10,851	149,082	1,154,373	2.0
TOTAL SHIPMENTS (1954)	4,838,377	358,777	43,055	5,240,209	100.0	53,980,013	3,359,384	408,854	57,748,251	100.0
TOTAL—PRIOR YEAR (1953)	5,528,846	338,542	37,792	5,905,180		68,437,764	5,498,399	586,827	74,522,990	

* Revised.

SCRAP: Industry Optimistic On '55

Scrapmen look for increased exports, better price structure . . .

Blame '54 problems on excessive scrap inventories, not on too much blast furnace capacity . . . Fight export control—By G. F. Sullivan.

♦ THE Iron and Steel Scrap Industry looks forward to more business, greater mechanization, increased exports and a better price structure this year. Low consumption, excess inventories and export troubles—serious 1954 problems—now appear to be cleared up.

So the general tone of last week's annual convention of the Institute of Scrap Iron and Steel was optimistic. Despite the fact that it was held in Miami Beach and that 1954 was a worse year for scrap than for industry generally attendance was off only 10 pct.

Watch Quality

Executive Secretary Edwin C. Barringer estimated 1954 consumption of purchased scrap at about 23 million gross tons, against 31.5 million tons in 1953, sees at least 28 million tons in prospect this year. He also feels that the 1954 export figure of 1,050,000 tons may be topped because of requirements of the Schuman Plan Countries. Re-armament of Germany may have an export effect too.

Institute President D. C. Holub of Akron, Ohio, predicted increasing emphasis on quality. Both foundries and mills are improving their own product quality and so are demanding higher quality in raw materials, he said. He added that increased safeguards are needed in preparing hydraulically compressed No. 2 bundles.

Bundles Pose Problem

If anything, the No. 2 bundle appeared to be the convention's No. 1 problem. There has been a sharp increase in baling press installations; and the industry can now produce far more bundles than it can sell. And in some cases customers are rejecting or downgrading bundles.

Finally, between No. 1 and No. 2 grades there is a price spread of between \$5 and \$11 a ton, depending on the district. According to M. A. Schlafer, Detroit, checks with consumers show that their complaints include low metallic recovery, high tin and copper residuals and high sulfur due to inclusion of rubber.

Low Yield Hurts

Just when it looked as though all that was needed was a little more care, L. H. Kreiger, Southwest Steel, Pittsburgh, dropped a small bomb. He unfolded a test report he'd just received from U. S. Steel. He explained that his company's Glassport Yard had assembled 50 tons of No. 2 bundle material, then had carefully removed what appeared to be all the free nonferrous metal, etc. (There were 500 lb of free copper, for example).

Then U. S. Steel engineers, co-operating in the test, pulled out several tons of additional material

which they suspected could be high in foreign metals. After No. 2 bundles were made they were shipped to a mill and dried out in a furnace. This disclosed that the bundles had contained some 5½ pct moisture.

Yield after charging in an electric furnace under controlled conditions, was only 73.4 pct. There were the following residuals: S 0.82; Cu 0.26; Ni 0.15; Cr 0.14; Sn 0.08. And these, of course, were exceptionally fine No. 2 bundles.

Inventories Caused Troubles

It now appears possible to appraise the 1954 market as an indicator of what's ahead. Cause of low prices and spotty buying was not excessive blast furnace capacity, according to President Holub.

He showed that ratio of blast furnace to ingot capacity was not as high in 1954 as it has been in several previous periods in which scrap prices were high. He laid the industry's troubles more to excessive inventories of home scrap at the mills and excessive stocks in dealer's yards. Now that both of these are down to workable size the price structure is better, and orders less spotty.

He estimated that consumers have between 5.5 and 6 million tons of scrap in inventory. A bit high, but not excessive. There's still concern in the industry that exports will be allocated or restricted. Scrap people admit that if there's a war there'll be a shortage of scrap—but say there'll also be a shortage of steel and everything else. So they claim they can't buy the national defense argument.

The same officers who served last year were reelected by the board of directors.



"I'll be a little late, dear—a No. 2 bundle problem."

STEEL: Electrical Sheets Revving Up

Last year was tough, but producers of electrical sheets and strip expect better market this year . . . Fractional motors, color television will lead the way . . . Grain oriented growing—By J. B. Delaney.

♦ WITH A YEAR of tough sledding behind them, electrical steel producers are in a good frame of mind over prospects for 1955.

The economic trade winds have shifted in their favor. Business is good and deliveries are growing more extended. Principal market outlets are increasing production and talking optimistically about rising sales curves.

No one doubts that 1955 will be a better year than 1954 when production of approximately 600,000 tons was the lowest since 1949.

Inventories Are Down

Chief reason for optimism is the knowledge that once-heavy consumer inventories and bulging warehouse stocks of consumer durables have been cut to workable levels. These twin bugaboos, plus reduced consumer production line schedules, played havoc with 1954 output.

But sad as it was, it's water over the dam to producers. They're too busy to spend much time brooding about it.

Spotting Pickup

Television, radio, and fractional horsepower motors—weak sisters during most of 1954—provided the chief impetus for the pickup, which first became apparent in fourth quarter although July was the year's lowest point. Transformer demand, which had been lagging until recently, also has changed for the better and is expected to surge significantly within the next several months.

Over the long haul, the industry was never more optimistic. Its product is vitally important to big and ever-expanding industries—electric power, electronics, television, radio, and appliances. Despite occasional slumps when industry generally took a turn for the worse,

business has been consistently good—even sensational.

Color TV Boom

Something new on the horizon is color television. This is potentially a lot of tonnage for electrical steel producers. They think 1955 will be a year of growth for this phase of TV as the number of color telecasts increases and the price of color receivers declines. By 1956 they look for color TV to be firmly established as a significant consumer.

Big reason for all the cheering is that color TV sets require on the average about twice the amount of electrical steel for transformers as do black and white sets—about 15 lb. compared with about 8 lb. Average radio receiver consumes about 4 lb.

Despite industry optimism, there is still plenty of competition. And 1955 will bring with it two new producers of grain oriented silicon, a super grade of electrical steel and once the exclusive province of two producers—Allegheny Ludlum and Armco. This grade, used largely in transformers, accounts for approximately 20-25 pct of total production.

Raising Capacity

U. S. Steel Corp., is getting set to produce grain oriented in volume at its Vandergrift plant, and expects to be in full production late this year. Crucible Steel Co. is teaming up with a leading consumer, Allis-Chalmers, to produce grain oriented at Crucible's Midland works.

The U. S. Steel program calls for installation of new continuous annealing lines, new high temperature box type electric annealing furnaces, and new box type gas fired annealing furnaces. Auxiliary equipment will include cranes,

tractors, slitters, shears and power facilities. In 1947 the company installed a cold reduction mill and continuous annealing furnaces in order to furnish electrical steel in coils, which now account for the lion's share of industry production, whereas cut lengths were once the major tonnage product.

Scrap Licensing Drops

Tonnage of iron and steel scrap licensed for export in December totals only slightly more than half the amount approved during the previous month. This is the result of new government regulations designed to keep a close check on rising scrap exports.

Export license approvals in December were 291,852 net tons, compared with 523,058 approved in November and 342,371 in October. Total licensing in the fourth quarter amounted to 1.1 million net tons, according to the Bureau of Foreign Commerce.

Electrical Sheets and Strip Production

Net Tons	
1954	590,000*
1953	879,000
1952	649,862
1951	836,137
1950	775,505
1949	473,152

*Estimated

IKE: Will Get Most of What He Wants

Reaction to President's State of Union Message indicates Congress will go along with most legislative proposals . . . See increased government spending, larger deficit . . . Push highway plans—By N. R. Regeimbal.

◆ **SURFACE** reaction to President Eisenhower's "moderately progressive" legislative program laid down in his State of the Union Message indicates that Congress will go along with most of it. Opposition

from the Democratic leaders seems likely only when his proposals aren't "progressive" enough.

In making his bid for favorable action by the Democratic controlled Congress, the President

made frequent pleas for harmony and cooperation between the two parties. The Republicans applauded each time, but the Democrats refused to break a polite attentiveness except for references to anti-Communist measures and foreign affairs.

President Eisenhower was proud of the success his Administration enjoyed in handling the transition from a peacetime to a wartime economy. He particularly cited, in the State of the Union Address, the ending of controls, tax revisions, and cuts in federal expenditures.

"The economic outlook is good," he commented. "Business activity now surges with new strength," he observed. This country's annual output can rise from the present level of about \$360 billion to \$500 billion in a decade, he predicts.

As expected, he ruled out the scheduled cuts in the corporation tax rate and certain excise taxes this year, but said he hoped they may be allowed to drop next year. This means continued high rates on—passenger cars, trucks, buses, and accessories; gasoline and diesel fuel; liquor, and tobacco.

The President also promised to continue policies designed to strengthen business and industry and to create a "favorable climate" for continued economic expansion.

In addition to seeking eased trade and tariff barriers, the President wants radically eased provisions to permit increased private investment abroad. One report is that he wants the tax on foreign investment cut 27 pct.

He also proposes to set up an Office of Coordination of Public Works in the White House executive office to plan and coordinate federal, state and local public works projects.

Checklist on Ike's Legislative Program

What He Wants

Tariffs—Power to cut selected tariffs by 5 pct a year.

Foreign Aid—Continued economic and military aid to Europe and a new Asian aid program.

Taft-Hartley—The same 14 amendments he requested last year.

Spending—Government spending near this year's \$64 billion, with the military taking \$35 billion.

Defense—Increased spending for Air Force equipment, guided missiles, and atomic weapons.

Highways—Expanded highway construction program, totaling about \$101 billion in the next 10 years.

Manpower—Extension of the 2-year draft law; higher pay and more liberal benefits for servicemen, and a voluntary reserve program.

Production—Two-year extension of the Defense Production Act of 1941.

Minimum Wage—Increase from 75¢ to 90¢ an hour, and broadened coverage.

Industrial—Measures for occupational safety, Workmen's Compensation for longshoremen and the 8-hour day for federal contracts.

Small Business—Extend the Small Business Act for another year.

Housing—Funds for 35,000 federal housing units in each of the next 2 years.

Health—Health Reinsurance bill.

What He's Likely to Get

Tariffs—With Democrats in a majority, chances are good for adoption.

Aid—Another favorite with the new majority party, and passage is almost certain.

Taft-Hartley—Both parties are split on the labor law question, and little or no action is probable.

Spending—Fight will develop over both parties is toward raising rather than a lowering of outlays. A high deficit probably means approval of Ike's program.

Defense—Fight will develop over Army and Navy cuts, but program will go through.

Highways—The program has popular and political appeal. Funds will probably be appropriated to start the program.

Manpower—Draft will be extended, but fights will probably develop over cost of liberalizing benefits and size of the civilian reserve program.

Production—Chances of getting a 2-year extension of Defense Production Act and part of the War Powers Act of 1941 are not too good, but both acts will be passed for at least one year.

Minimum Wage—Unions will exert strong pressure and may get increase, but industry will probably block coverage extension for this year.

Industrial—Form of these proposals will determine passage; chances are that most of them will be approved.

Small Business Act—Not particularly controversial, and should pass.

Housing—Chances are that he will get only a one-year authorization.

Health—Democratic control gives the bill a better chance than it had last year.

ALUMINUM: Foil Hits New Highs

Sales top '53 record by 30 pct in '54 . . . See near doubling of foil packaging by 1970 . . . Salesmen stress utility but appearance is big factor in commercial packaging—By J. B. Delaney.

♦ **ALUMINUM FOIL** producers are shooting for a bigger share of the \$7 billion packaging market. They can point to considerable progress in the last several years. But they feel the surface has barely been scratched.

In 1953 the industry produced approximately 115 million lb. of foil worth about \$73 million—a record performance. This year production is up about 30 pct. Three quarters of this goes into packaging. The balance is used in electronics, power, air filters, insulation, and printing.

October 1954 shipments established a new all-time monthly record of 14.8 million lb. It was the seventh alltime record set for shipments during the 10-month 1954 period. November set another new record.

See Market Doubling

Producers have been installing new equipment to keep pace with demand. Lewis Machinery Div. of Blaw-Knox Co. has received an order from Cochran Foil Co., Louisville, Ky., for three 62-in. foil mills costing nearly \$1 million. The mills will operate at 2000 fpm. Lewis Machinery Div. has built 104 foil mills, has 5 on order, and reportedly is negotiating with another producer for two more high speed mills.

All three primary aluminum producers have boosted foil rolling capacity in the past year. Latest development in this direction came last week with the acquisition by Revere Copper & Brass Inc. of Standard Rolling Mills Inc., a foil producer of long standing. Latter firm will be operated as a division of Revere and is admittedly only a start in the foil business for Revere.

Kaiser Aluminum & Chemical Corp. has ordered two extra-wide four-high aluminum foil mills from Blaw-Knox for installation at its new plant in Ravenswood, W. Va. The 62-in. wide mills will produce foil in widths of approximately 54 in. compared with presently available widths of 36 in. Gauge will range down to .00035 in. at speeds up to 3000 fpm.

People like Alcoa's Jack Hamilton, manager of packaging foil sales, and Phil Althen, sales development, look for a steady growth in line with population increase, accelerated by new applications.

These men talk in terms of a \$180 million aluminum packaging market by 1970. That's roughly 243 million lb at current prices—a whale of a lot of material that runs about 0.00035-in. in thickness.

This represents quite a jump over the 25 to 30 million lb per year in the 1930's, when applications were relatively limited.

Cigarettes, chewing gum, some foods, and beer labels were the mainstays of the market in those days.

Salesmen Stress Utility

Today this ultra-thin but highly useful metallic product performs hundreds of packaging jobs, including food, tobacco, labeling, gift wrapping, home freezing and cooking, dairy, chemicals, cosmetics, photography, drugs, and protection of metal parts in shipment.

Aluminum foil producers stress utility of the material rather than its attractive appearance, although the latter has always been a big selling point.

Functional advantages of foil include (1) cleanliness, (2) transfers no taste or odor to foods, (3) resists moisture vapor, (4) will not absorb liquids, (5) grease and oilproof, (6) protects foods against damage by sunlight, (7) protects against oxidation spoilage, (8) resists contamination,

Aluminum Foil



ORE: McDowell Moves Into Beneficiating

Company lands contract for 500,000 ton per year pelletizing plant for Cleveland-Cliffs Republic Mine . . . Also acquires control of Wellman Engineering . . . New plant will have many unique features—By T. M. Rohan.

◆ **LIKE THE CAMEL** that poked its head in the Arab's tent, the McDowell Co. of Cleveland last week moved into the ore beneficiating field and acquired control of Wellman Engineering.

About a year after its formation in 1944 McDowell received its first major contract from Wellman—a hurry-up assignment for materials handling bridges for Inland Steel and Wisconsin Steel in Chicago. These successful jobs were followed by many more in erection of materials handling equipment.

In December last year McDowell

acquired 86 pct of the outstanding stock of its first big customer, Wellman, for \$3.6 million, tripling its employment to about 1500 permanent personnel and adding four plants in the process. Last week McDowell received its largest contract to date in the ore beneficiation and pelletizing field—a 500,000 ton per year pelletizing plant for Cleveland-Cliffs Republic Mine at Republic, Mich. Much fabrication will be done by Wellman. A "Ball-Well Flying Saucer" and updraft traveling grate are unique features of the design.

Construction of the concentrating plant for Cliffs' Republic Mine has been underway for several months and is expected to be ready for operation late in 1955. The pelletizing plant to be built by McDowell will be located a few miles west of Marquette on the main line of the Lake Superior and Ishpeming RR and will be completed early in 1956.

Similar to Sintering Machine

The Republic Mine is Cliffs' second venture in the development and concentration of Upper Michigan's low grade jasper formation. The concentrating plant being built to treat the hematite formation at Republic will utilize the oil flotation process, similar to the first plant built at the Humboldt Mine, owned jointly by Cliffs and Ford Motor Co.

The updraft traveling grate is similar to a sintering machine with the exception that raw pellets are fed onto the grate in several layers and wind is blown through the hot bed from below the machine rather than from the top down. The designed capacity of this machine is 2000 gross tons per day.

The "Ball-Well Flying Saucer" is to be used for forming the raw pellets to be fed to the heating

grate. This machine has been adapted by Cliffs and McDowell engineers from a mechanism originally developed in Germany for the cement industry and also used in the pharmaceutical industry. The machine consists of 16 ft diameter tilted "saucer" with variable height walls. Concentrates mixed with certain binding agents will be fed to the machine at a central point and rotating actions of the "saucer" will form this fine grained material into round balls. These will then be fed to the heating grate from which the hardened pellet will emerge.

The first commercial size "saucer" is now nearing completion at the Wellman shops and is to be shipped to the Humboldt Mine for exhaustive full scale tests prior to construction of additional units for the Republic plant. Some of the early experiments at Cliffs' laboratory were carried out in a converted cement mixer.

Saves Space

In order to provide flexibility to handle expected varied material, the depth of the bed in the "saucer" can be controlled by raising or lowering the walls, by adjusting the tilt of the machine, or by changing the speed at which the "saucer" rotates. The machine also has combined mixer and scraper arms extending to the floor of the vessel as well as along the side.

Plan to Expand

Inland Steel Co. is granted fast tax write-off benefits for 65 pct of a \$2,404,550 expansion of its plant at Indiana Harbor, Ind. Funds will be used for equipment to produce wide-flange steel beams.

Office of Defense Mobilization granted the firm a certificate of necessity permitting write-off of

PACKAGING

continued

and (9) cools quickly, heats rapidly.

Although usually used in combination with other materials such as paper, plastic, or cellulose films, plain unsupported foil is used for semirigid containers for bakery products, specialty foods and frozen cooked foods; milk closures, florist wraps, hermetically sealed packets and metal parts wraps, tags, nameplates, and sealing tapes.

Foil producers give their customers a lot of the credit for success of the product through their development work in overcoming the low tear strength of the material through laminating with other materials and applications of various protective coatings.

The mills are counting on growing acceptance of aluminum foil by the housewife to stimulate sales. This has been brought about by the introduction of foil in roll form into the home, where it is used for everything from packing dad's lunch to wrapping foods for the deep freeze.

about two-thirds of the cost for tax purposes in 5 years. The money will be used to purchase new equipment.

ODM also granted special tax benefits to Duquesne Light Co. for its share of the cost of a private atomic energy power plant under construction at Shippingport, Pa. The firm will write off 75 pct of \$14 million it will spend for research and development on buildings, power generating and distributing equipment. Duquesne estimates that the atomic power facilities will be in production in 1957.

Inland:

**Sets '54 production record;
Capacity up 300,000 tons.**

Inland Steel Co. in 1954 set an ingot production record and its annual rated capacity was boosted on Jan. 1 to 5 million ingot tons. Its 1954 rating was 4.7 million tons.

Capacity operations in December rounded out the year at an average rate of 96.2 pct of capacity and brought total production to an estimated 4,523,000 tons. The previous record was 4,513,000 for 1953. The company's operations in both 1954 and 1953 were equivalent to 137.4 on a production index using 1947-49 production as 100.

This is the second year Inland has increased its steelmaking capacity without new installations. The 1954 increase of 300,000 tons is on top of a 200,000-ton increase in 1953.

Inland's increase in 1955 capacity accounts for approximately 20 pct of the total gain of the industry. Steel industry capacity was raised 1,497,900 net tons as of Jan. 1, 1955.

The company has lifted its capacity a total of 1,600,000 tons since 1950. About half the gain has come from enlargement of existing furnaces, improved design of furnaces, heavier and more efficient material moving equipment, and development of better techniques, including heavy use of oxygen.

One new shop of four openhearth furnaces completed in 1952 accounted for about 800,000 tons of additional capacity.

Steel:

**Capacity up nearly 1.5 million
tons to total of 125.8 million.**

Steel capacity of the U. S. during 1954 was increased by 1,497,900 tons to bring total steelmaking potential at the start of 1955 to 125,838,310 tons.

This latest increase means that in the 9 postwar years, U. S. steel capacity has jumped 34 million tons or about 37 pct.

The industry's blast furnace capacity during 1954 went up 1,969,710 tons to a total of 83,971,100. Coke capacity is now rated at 72,684,750 net tons a year. With the improved quality of raw materials it is now possible to operate over 95 pct of blast furnace capacity without the use of coke from sources outside the iron and steel industry.

Follansbee:

**Town fetes Eaton as mill
saviour . . . 1500 attend.**

Cyrus W. Eaton made a triumphal entry to Follansbee, W. Va., last week for his first view of the Follansbee Steel Co.

For the town it meant the plant was there to stay for another 3 years at least. For Eaton, Louis Berkman, and 48 minority stockholders it meant a chance to try and make a marginal specialty producer pay off.

Celebration climaxed the long legal struggle after the plant was

sold to Frederick W. Richmond for \$9.2 million. Richmond was to sell most equipment to Republic Steel and keep three warehouses.

A gala dinner for over 1500 was prepared and served by townswomen in the sitting room of the Follansbee plant—largest and only room of its size anywhere in the town.

Eaton Had Fever

In a New Year's Eve atmosphere of tin horns, paper hats and an orchestra, townspeople again cheered the entry of Eaton, obviously strained from a 103° fever but determined not to miss the party. He told them it was "one of the most thrilling experiences of my life. A modern miracle has been worked here in Follansbee which I hope we'll have more of."

"Follansbee is a mighty good steel works," he said. "If it were not, the astute Republic Steel would not have been interested in it."

"We believe, with the people of Follansbee, there is a real field for this mill. If a company like this sticks to specialties which bring much higher prices—special strips and sheets—it can make money. And, of course, Follansbee must make money, or all the interest shown in its salvation will be for naught."

"The mill is ideal for specialties. It has a group of workers with the know-how and the spirit."

"We have been asked where the raw materials for the mill will be obtained. That will be open to everyone. Lou Berkman is a very capable steel man. He will buy any product the cheapest he can get it. A supply would be available from the Portsmouth works of Detroit Steel if he wants it."

"Portsmouth is right on the Ohio River, like Follansbee. The material perhaps could be brought up here at lower prices than it could be obtained elsewhere."

Sen. Estes Kefauver of Tennessee, a member of the Senate Anti-monopoly Subcommittee, told the group, "Whenever we have a concentration of power in one place, the common people are bound to suffer. This is a sign of what is going to happen in a lot of communities."



"Oh, it's sort of expected of us I guess."



"T" TAIL is three stories tall, is designed to cut weight, drag and eliminate spray damage.

Seaplane:

First multi-jet seaplane built for Navy.

Unbomtable airports are the home bases for the Navy's new XP6M-1, otherwise known as the Martin SeaMaster. Prototype had its debut last week at Martin Aircraft Co.'s Baltimore plant.

The SeaMaster is powered by four Allison J-71 turbojet engines capable of 10,000 lb thrust each. As for performance: speed tops 600 mph, payload is 30,000 lb, and normal cruising altitude is 40,000 ft. Range, weight and dimensions are still classified.

What's really different is the hull. Gone is the short, dumpy boat with wings. In its place is a

long, sleek fuselage (almost the entire length of which rests in the water) which is just about as aerodynamically efficient as any land-plane.

Other unusual features include the engine nacelles mounted above the wings, plastic wing-tip floats permanently fixed in place, and the towering "T" shaped tail. Engines and horizontal tail are high to reduce the possibility of spray damage in landing and takeoff and also to permit easy access for engine maintenance while the SeaMaster is in the water.

Tip floats are in their most efficient location—actually improving the effectiveness of the wing. But the location seems strange because the propellers of conventional seaplanes must be kept clear of the water. Negative dihedral (drooping) wings allow tip floats to be in the water while the wings stay dry.

Aiming at ultimate mobility, the SeaMaster may be refueled in the air or on the sea, either by ship or submarine. Designed primarily for mine-laying and photo-reconnaissance, it can also carry bombs (atomic or conventional) or personnel.

Another special feature is the specially-developed water-tight rotating mine door, through which almost all types of armaments may be dropped.

Initial flight tests are scheduled for this spring.

Military Wants Help

Any inventor who develops a workable method of spot-welding or seam-welding stainless steel or

turns out a mica substitute can help the military answer some difficult questions.

Published by the U. S. Commerce Dept. is a new list of 109 technical problems confronting the Armed Forces. Purpose of printing the list is to enlarge the areas of technical aid that scientists, inventors, and research groups can provide to the defense agencies.

This publication, available free from the National Inventors Council, U. S. Commerce Dept., is entitled *Technical Problems Affecting National Defense, Supplementary List 1954*. It supplements a similar list issued last August.

Offshore Radar Station

Fabrication and building of the first offshore radar warning station ("Texas Tower") to be erected off the Atlantic coast will be performed by the Bethlehem Steel Co. Shipbuilding Div., Quincy, Mass.

Bethlehem has a Navy contract for the job, which will cost between \$5 million and \$10 million. For purposes of this project, the firm is associated with Raymond Concrete Pile Co. and the DeLong Engineering and Construction Co., both of New York.

Site of the new station is to be approximately 100 miles off the New England coast. Others are to be placed at offshore points by the Navy for Air Force use.

Contracts Reported

Including description, quantity, dollar values, contractor and address. Italics indicate small business representative.

Shell, illuminating, 129000, \$2,889,600, Temco, Inc., Nashville, Tenn.

Heater space nonelectric, circulating, 50 ea, \$231,237, Gillilan Brothers, Inc., Los Angeles 6, Calif.

T-32A Acft, spare parts, spec. tools, 70 ea, \$2,340,000, Lockheed Acft. Corp., Burbank, Calif., J. S. Card.

Mobile Tr. Units, 2 set, \$564,122, North American Avia, Inc., Los Angeles, Calif., M. J. Dubuc.

Generator type Mb-1, 411 ea, \$319,528, Westinghouse Elec. Corp., Dayton, Ohio.

Case, carrying PR 143206, 2000 ea, \$650,000, H. Koch & Sons, Corte Madera, Calif.

Projector, 16 MM sound motion picture, 274, \$297,613, Federal Mfg. & Engr. Corp., Brooklyn, N. Y.

Batteries, silver zinc, 1482, \$680,001, Yardney Electric Co., New York.

Cartridge cases 40 Mmm Mk 3, 2500000, \$2,085,500, Norris-Thermador Corp., Los Angeles, Calif.

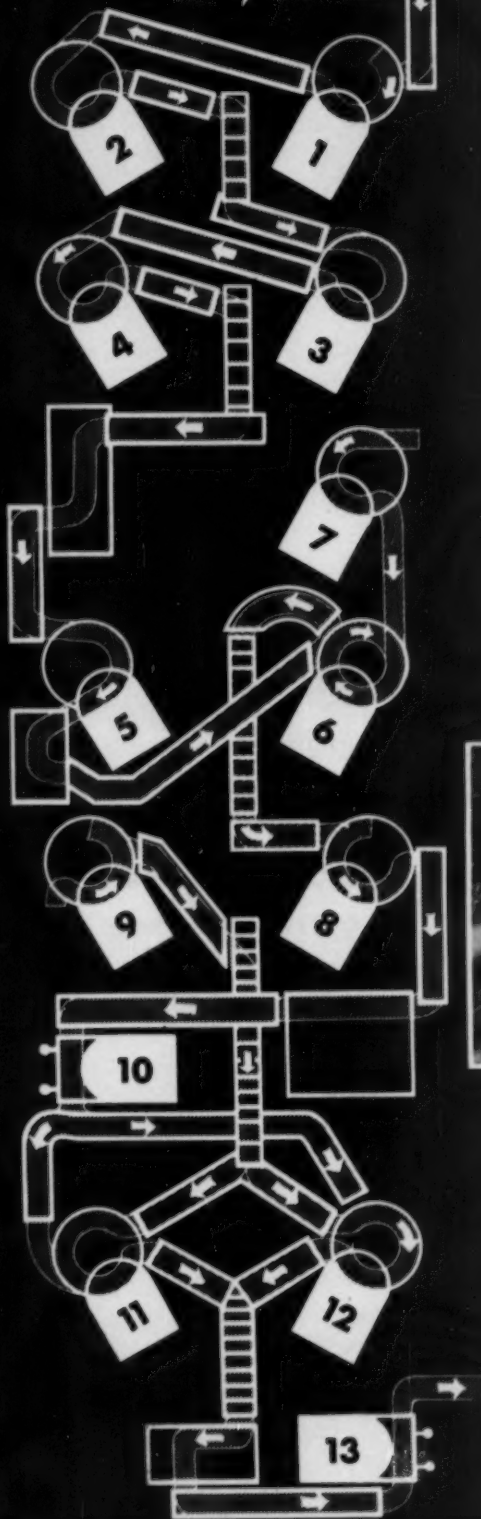
Light trucks 388 ea, \$492,700, Chevrolet Motor Div., Detroit, Mich., G. M. Halev.

Light trucks, 150 ea, \$203,391, Willys Motors, Inc., Toledo, Ohio.



SLEEKNESS, size show to good advantage. Checker-like objects barely visible on wings are rubber pressure pads for simulated load testing.

ASSEMBLY LINE WITH
13 DENISON MULTIPRESSES



Assembles
13,000 auto door-locks
per day with

DENISON MULTIPRESS®

THIS COMPANY set out to assemble 10,000 auto door-locks per 16-hour day . . . beat its goal by 3000 with Denison Multipress.

With a line of 13 Denison hydraulic Multipresses, Reid Products Division of The Standard Products Company assembles 13,000 door-locks . . . 34 pieces per lock.

Parts are carried on conveyors and chutes.

Operators load component parts on Denison Index Tables which position them under the hydraulic ram up to 70 times a minute.

Assembly line takes up only 500 square feet.

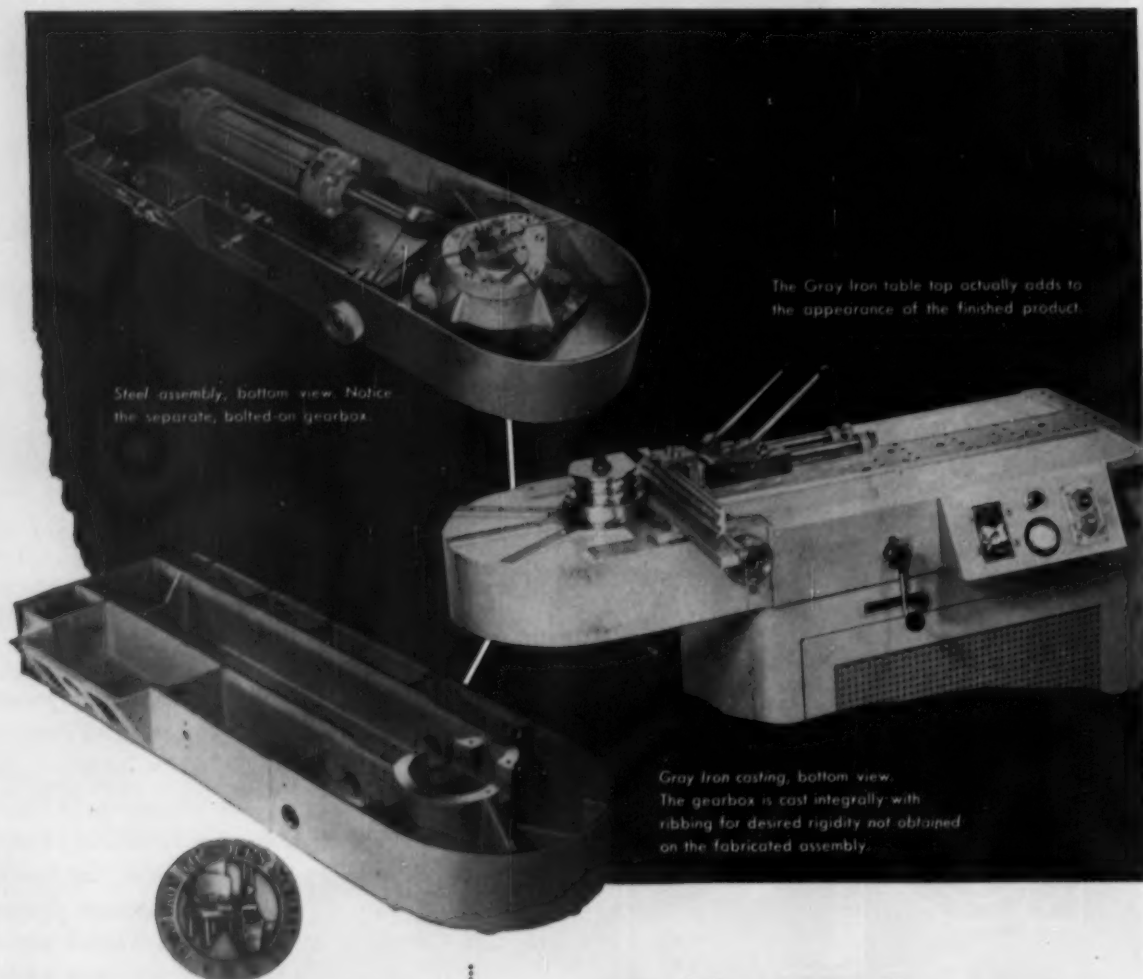
If you have a problem in automatic operation. . . or any job that

*Loading for staking of
five-part sub-assembly*

calls for controlled pressures up to 75 tons, bring it to Denison. Write to:

THE
DENISON ENGINEERING COMPANY
1242 Dublin Road • Columbus 16, Ohio

DENISON
Hydraulics



Steel assembly, bottom view. Notice the separate, bolted-on gearbox.

The Gray Iron table top actually adds to the appearance of the finished product.

Gray Iron casting, bottom view. The gearbox is cast integrally with ribbing for desired rigidity not obtained on the fabricated assembly.

**This symbol assures
you the most for
your casting dollar**

Here's why it pays to call in one of the more than 500 leading foundries displaying the Society symbol:

- The most recent technical and business information is available to each member through the Society to help you design better products at lower cost.
- The use of sound cost accounting procedures is recommended and encouraged among Society member foundries, assuring full value for your casting dollar.
- Improved castings result from the advanced techniques and the high sense of responsibility of Society members.

MAKE IT BETTER WITH GRAY IRON

15 Hours Saved ...by Casting in Gray Iron

Producing these machine table tops in Gray Iron takes 7½ hours. Previously, the tops were fabricated of torch-cut steel segments, requiring 22¼ hours.

Redesigning in Gray Iron has increased the rigidity of the table tops, improved their appearance and simplified production operations.

There are many valuable advantages which Gray Iron castings can offer you. Call your nearest Society member foundry and through him the full facilities of this association are available to help you.

Or, write direct to Gray Iron Founders' Society, Inc., National City-E. 6th Bldg., Cleveland 14, Ohio, for helpful technical and business information.

GRAY IRON FOUNDERS' SOCIETY



**CUTS TWICE AS FAST
AS MOST HACK SAWS!**

New Power Saw with New High-Speed Steel Band Tool

It's a new DoALL . . . mighty Power Saw designed to cut faster than any saw of comparable price! Fully automatic . . . continuous-cutting . . . employs Demon high-speed steel band tools and it removes only half the stock wasted by hack saws. You'll want a demonstration —



The DoALL Company
Des Plaines, ILL., U.S.A.

Turn the page for details.

CUT CUT-OFF TIME

with this Amazing New Bandsawing Team



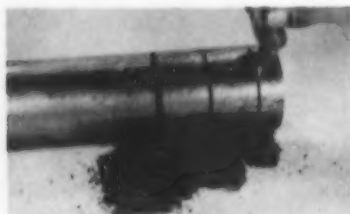
RED HEAT HARDNESS! Ability to take high temperature permits heavier feeds, high speeds.



LOWEST COST PER CUT! 300 pieces, 3" dia. CR steel cut with one Demon blade at a rate of 2 min. per cut.



LONGER BLADE LIFE! Ordinary blade lasted 10 cuts in hardened steel (42C), DEMON lasted 98.



LESS STOCK LOSS! Compare $\frac{1}{8}$ " Demon band kerf with $\frac{1}{4}$ " hack saw or $\frac{1}{4}$ " cold saw . . . less material reduced to chips.

Fully automatic feeding, indexing and sawing Saw band tension and feed pressure automatically maintained for constant optimum results Red heat hardness band tool Capacity up to 12" rounds, 12" x 12" flats Also fixed speed models without automatic indexing.

Faster Cutting Plus Longer Tool Life Plus Less Stock Waste Means Lower Cost Per Cut

THE DoALL Power Saw is specifically designed to employ the new Demon *high-speed steel* band tool. This heat resistant tool can be run at higher speeds under heavier feed pressure than carbon steel blades. The Power Saw cuts at least twice as fast as any other type of cut-off machine of comparable power and capacity. Here are typical examples:

MATERIAL	SIZE	DoALL TIME
4340	7" dia.	7 min. 30 sec.
18-8 Stainless	3 1/2" sq.	4 min.
1020	4" dia.	2.87 min.
Notes	11 3/4" dia.	16 min.
1020	3 1/2" dia.	1.3 min.
4150	9" dia.	10 min.

LESS STOCK WASTE. Compared with circular cutters, reciprocating hack saw blades or other parting tools, the DoALL saw band removes much less material. It produces a kerf only $\frac{1}{16}$ " wide. Savings in chip waste can be phenomenal.

EXAMPLE. A DoALL Power Saw used to cut high chrome—high carbon splitter blanks saved one complete $\frac{1}{2}$ " piece every 8 cuts as compared with hack sawing. Each half-inch piece thus saved represented \$30 worth of this costly material. And, the DoALL averaged 28 minutes per cut compared to 47 minutes for the hack saw.

FREE DEMONSTRATION. You can see it and believe it! Call your local DoALL Store or write DoALL, Des Plaines, for a free demonstration. And, ask for new Catalog.



Friendly DoALL Stores... (In 40 cities)

Personalized Service... Complete Stocks... Local Delivery



EDUCATIONAL STUDY WALL CHARTS
Economic Principles
\$1.00 each Post Paid
Lower quantity prices.

Report To Management

Railroads: Head Out of Quagmire

Railroad business is anything but great but there are signs of a pickup. For the first time since August 1953 estimated net income of Class I railroads was higher in November than in the same month of the preceding year. Net income for 130 Class I railroads for the month was estimated at \$76 million compared with \$60 million in November a year ago.

Another sign of the improvement:

loading of revenue freight through most of December was running ahead of the December 1953 pace. And it's estimated rail freight traffic in the first quarter of 1955 will be about 1.4 pct ahead of 1954 levels. Carloading increases will come from stepped up shipments of autos, trucks, ores and concentrates while shipments of machinery, oil and cotton will be down from last year.

But seriousness of the railroad plight

cannot be overlooked despite the recent uptrend. Net income for the first 11 months of 1954 amounted to about \$547 million compared with a figure of \$799 million in 1953. Rate of return for the 12 months ended Nov. 30, 1954, averaged 3.16 pct compared with 4.32 pct for the same period ended Nov. 30, 1953. Freight car loadings last year totaled 33,862,883, a drop of 11.6 pct from the 1953 total of 38,301,145. By commodities, the greatest decrease in freight car loadings was in coke, down 39.1 pct from 1953, and ore, off 32.8 pct. Only item which gained last year was grain and grain products, up 3.6 pct from 1953.

This Year Everybody's Happy

Seldom have year-end statements and annual reports been so filled with cheer and optimism. If you added up the figures on the amount of business each firm thinks it will do, it would mean 1955 would be a boom year of unbelievably fantastic proportions. This is not the case, though there is a chance '55 could be the best year in the history of our economy. What's happened is that most businessmen were somewhat startled by the strength of the business pickup

that started at the end of the summer and now they're feeling a little heady. Business for all of them just can't be so good as most of them are predicting.

Amid the flurry of blue-sky business

forecasts there are two industries that are almost alone in expecting a decline this year—machine tools and shipbuilders. In surveying more than 400 industries Commerce Dept.'s Business & Defense Services Administration found that machine tool builders expect shipments this year to drop to about \$600 million compared with \$900 million in 1954. But there is the possibility that if government tool buying programs swing into high gear the decline will not be so great as the industry anticipates.

On the shipbuilding outlook, BDSA found

that despite the subsidy passed by the last Congress, improvement for this depressed industry won't come this year.

Personal Income Is Mounting

Payroll payments in November showed the greatest gain for any month up to that point in 1954. The increase pushed total personal income up \$1.3 billion on an annual basis as November earnings were figured to be at a \$287.6 billion per year rate, \$400 million more than in November 1953. Big factor in the payroll climb was the sharp climb in auto production.

For the first 11 months of 1954,

personal income was estimated to be running at a \$285.9 billion rate, \$100 million per year less than for the same period in 1953.

Watch More Chevies Go By

In the fascinating auto production race, Chevrolet withstood Ford's strong challenge and held its position as the nation's top carmaker. For 1954, Chevrolet edged Ford by 19,603 cars, turning out a total of 1,414,365 autos to Ford's 1,394,762. Ford, however, claims it topped all companies in auto sales.

INDUSTRIAL BRIEFS

Elected . . . Automotive Tool & Die Manufacturers Assn. elected Lawrence K. Sweet of the Superior Machine & Engineering Co. as its president. Walter Jakubowski, Richards Bros. Div., was elected vice-president and Henry W. Mouw, of Royal Oak Tool & Machine Co., is treasurer.

New Moniker . . . Haydon Bolts, Inc., is the new name of A. & M. Haydon Inc. The company will continue operations at 304 No. 22nd St., Philadelphia, but upon completion of a new modern plant in the summer of 1955, operations will be conducted at Adams Ave. and Unity St., Philadelphia.

Acquires Company . . . U. S. Industries, Inc., has acquired the assets of Fray Machine Tool Co., Burbank, Calif.

East Coast Office . . . Benchmark Mfg. Co., Gardena, Calif., opened a new East Coast office and warehouse at 519 So. 5th Ave., Mt. Vernon, N. Y. It will be known as the Benchmark Parts Co.

Diamond Jubilee . . . L. S. Starrrett Co., Athol, Mass., is celebrating its 75th anniversary this year. Special events will include the announcement of many new tools and the release of a new deluxe catalog.

Becomes Division . . . Consolidated Machine Tool Corp. was dissolved as a separate corporation and will be conducted as a division of the parent corporation, Farrel-Birmingham Co., Inc.

Dividend . . . Baldwin-Lima-Hamilton Corp. declared a quarterly dividend of 20¢ per share on the company's \$13 par value common stock, payable Jan. 31 to shareholders of record as of the close of business Jan. 7.

Buys Plant . . . Mexico Refractories Co. has purchased the Niles Fire Brick Co., Niles, Ohio. Included in the sale were extensive property holdings in Ohio, Pennsylvania and Kentucky where fire clay and silica deposits are located.

Enters Field . . . Rockwell Manufacturing Co.'s Delta Power Tool Div. has entered the metalworking lathe field with the introduction of a new 11-in. metal lathe designed to meet the needs of industrial metal fabricating firms, tool and die shops and technical and vocational schools.

Pittsburgh Office . . . Kaiser Aluminum & Chemical Sales, Inc. opened a new branch sales office in Gateway Center, Stanwix St., Pittsburgh. W. W. Grimm is branch representative.

Flying High . . . Lord Mfg. Co., Erie, Pa., has a unique customer service idea. Four of the company's executives have become pilots to provide better service to their customers.

Highest Honor . . . A. H. Zeilinger, safety superintendent at Colorado Fuel & Iron Corp.'s Pueblo plant, was awarded the National Safety Council's highest honor, the N. S. C. Citation for Distinguished Service to Safety.

Rep Appointed . . . Continental Screw Co. has appointed Willard G. Hartman, St. Paul, Minn., as its representative.



Established . . . E. W. Bliss Co., Canton, Ohio, established sales offices at 816 N. Hollywood Way, Burbank, Calif., to supplement its West Coast division. M. Frank Strauss and Donald C. Walker have joined the company to man the Burbank office.

Honored . . . John A. Bauer, vice-president and member of the board of directors, Hanson-Van Winkle-Munning Co., Matawan, N. J., was honored on his 25th anniversary with the company with a dinner at the Princeton Club.

Sales Record . . . Westinghouse Electric Corp.'s Lamp Div. will reach an all-time high for sales for 1954.

New Sales Activity . . . Beckman Instruments, Inc., has a new field engineering activity which is designed to assist the process industries in the problems of applying analytical instrumentation.

New Foundry . . . The Bullard Co. has awarded the general contract for construction of its new foundry to Edwin Moss & Son, Inc.

Expanding . . . Koppers Co., Inc., has expanded the operations of its Metal Products Div. in Baltimore, Md., by purchase of the F. X. Hooper Co., Inc., Glen Arm, Md.

Change of Address . . . Republic Manufacturing Co., Cleveland, recently moved to a new modern building at 15655 Brookpark Rd.

Going Exploring . . . Uranium exploration activities in the Colorado Plateau area and other mineralized regions of Western United States are being undertaken by The New Jersey Zinc Co. and The Texas Co.

VANADIUM-ALLOYS STEEL COMPANY

announces **ANOTHER FORWARD STEP**
in better tool steel service!

TRUE-SHAPE TOOL BITS

at unground bit prices

SMOOTH
SURFACES
NO PITS

SHARP
CORNERS

TRUE
SIZE

FULL
HARDNESS

Progress in Manufacturing ...

TRUE-SHAPE

TOOL BITS

at no extra cost

TRUE-SHAPE Tool Bits are accurately dimensioned, sharp cornered, smooth finished, fully hardened when you buy them. And yet you get these improved, modern bits at no increase in cost. • Order TRUE-SHAPE in your favorite standard grade, and see the difference!

NEW-STYLE PACKAGING

for simplified handling and control

Progress in Packaging ...

EACH TRUE-SHAPE SIZE HAS A

BOX TO FIT

No "compromise" boxes and messy filler material for TRUE-SHAPE Bits! Each bit size has its own size box—speeds handling and inventory control—saves time all around. Write for descriptive folder.

Order your TRUE-SHAPE Tool Bits in the new package in any of the following grades:

RED CUT SUPERIOR
RED CUT COBALT
RED CUT COBALT B

VASCO M-2
NEATRO
E.V.M.

TELLS
GRADE

TELLS
NUMBER

—at a glance!

TELLS
SIZE



VANADIUM-ALLOYS STEEL COMPANY

Manufacturers of First Quality Tool and Die Steels • Latrobe, Pennsylvania

COLONIAL STEEL DIVISION • ANCHOR DRAWN STEEL COMPANY

In Canada: Vanadium-Alloys Steel Canada Limited, London, Ontario



Noise Elimination An Endless Problem

Style changes, new high-power engines, accessories all make trouble for Detroit's sound engineers . . . Axle, tire and road noises are biggest headaches . . . Nash, Hudson share bodies, not looks—By R. D. Raddant.

♦ **THE PROBLEM** of sound in automobiles is never ending. No sooner is one troublesome noise apparently licked for all time, than a new development brings out a whole new set of sounds and noises that must be controlled or abated for the critical customers.

Some are entirely new, such as sounds that might be created by a new high-compression engine or by a new development such as power steering or air conditioning. Others may be recurrent, such as an axle noise, that may have been successfully dampened on one model, only to emerge with a vengeance because some styling modification disturbed the delicate balance.

Stop Clock Click . . . Then there are the extremes, such as originated at Cadillac a few years ago when quite an extensive program was conducted to quiet the clock for this division's ultra-critical customers.

These are the problems that con-

sistently confront the GM Noise and Vibration Laboratory at the General Motors Proving Ground. Headed by David C. Apps, it employs the most modern and delicate sound equipment to locate troublesome noises and vibrations, then find the means to eliminate or isolate them.

Solve All Problems . . . This laboratory takes on sound problems either from a corporation-wide standpoint when some particular noise or sound is universal throughout the automotive lines. Or it will be asked to solve a problem that is peculiar to just one division. In addition, each GM division has its own engineers who work on sound and vibration elimination.

Mr. Apps lists road rumble, axle noise and tire disturbances as problems that remain to be solved completely. Other current problems include engine noise and accessory noise, such as might originate in air conditioning or

power steering. The laboratory, incidentally, does not work on squeaks and rattles, which are manufacturing problems and "beneath the dignity" of the laboratory's delicate detection and evaluation equipment.

Must Eliminate or Smother . . . Sound problems appear to break down into categories: those that can be handled by a modification or change in design and those that can be isolated or dampened without need for eliminating the basic cause.

Fan noise is an example of the former. It can be solved by such measures as slowing speed, adding more blades, changing pitch or similar measures.

Engine Noises Increase . . . Engine noises, unfortunately, have increased with the introduction of new engines with higher compression ratios and higher peak combustion pressures, but have been brought under control by improv-



RESTYLED Hudson Hornet (above) has one-piece grille, wrap-around windshield, double-strength, single-unit body and an improved deep-coil suspension system.



NASH Ambassador (above) and Statesman models have a new Ambassador V-8 engine with Twin Ultramatic drive. (For story turn page.)

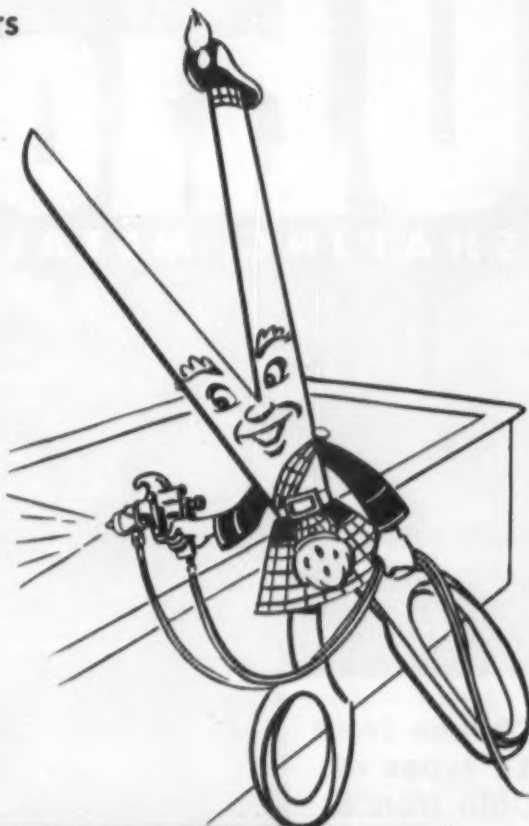
New-type coating cuts tank lining expense

"Mr. Cost Cutter" reveals how users gain better protection and save with sprayed-on plastisol coatings

Development of the first practical *sprayable* plastisol materials by United Chromium opened wide new opportunities for saving in corrosion control. Two cases illustrate how these heavy-duty vinyl plastic compounds are superseding conventional lining material with spectacular results.

In one instance, the plating division of an automobile company used Unichrome Coating 5300 in a big way on rinse and electrocleaning tanks. Why? Because it was found that the outside as well as inside of tanks could be protected with heavy plastisol coatings for less money than it formerly cost to line just interiors with plastic sheets. Moreover, Unichrome Plastisol provided *seam-free* coatings, assuring against undercutting.

At another plant, tumbling barrels lined with Unichrome Plastisol Coating were compared with others lined with synthetic rubber. Plastisol is now preferred. Subjected to the roughest kind of production for 9 months, it did more work because of its toughness and chemical resistance, proved more durable than equal thicknesses of rubber — and cost only half as much.



MORE WAYS UNITED CHROMIUM HELPS TO SAVE ON COATING OF METALS

Chromium plating economies

With Unichrome SRHS Chromium Solutions, bumper plating increased 33% at one plant... bath upkeep costs dropped 40% for still another user... for a third, work took only 2½ hours instead of 3½, came through with fewer rejects.

Source of power—and savings

Unichrome Rectifiers are unusual in design of rectifier stacks, transformer ratings, wiring and insulation details — to give long service with high efficiency in plating, anodizing. Result: lower cost per year.

Complete line of protective coatings

United Chromium can help you obtain best protection for plant and equipment from the line of chemical resisting Ucilon® Protective Coatings. Included are vinyls, vinyl-Thiokols, chlorinated rubbers, phenolics, fish oils, and neoprenes.



UNITED CHROMIUM, INCORPORATED

100 East 42nd St., New York 17, N. Y.

To finish it better and **SAVE** call in "The Unichrome Man"

United Chromium offers you the advantages of: (1) 25 years of specialized experience in metal finishing; (2) Wide experience in both organic and plated finishes; (3) A diversified line of products for decorative and functional finishing — including plating processes and equipment, protective coatings, chemical conversion coatings for zinc; (4) Thinking geared to cost-cutting, product-improving possibilities. We'd welcome an opportunity to help you "Finish it better AND SAVE."

Waterbury 20, Conn. • Detroit 20, Mich. • Chicago 4, Ill. • Los Angeles 13, Calif.

In Canada: United Chromium Limited, Toronto, Ont.

January 13, 1955

53

Ohio Rolls

SHAPING METAL FOR ALL INDUSTRY

**Choose from
11 types of
Ohio Iron &
Steel Rolls:**

Carbon Steel Rolls
Chiloloy Rolls
Chiloloy "K" Rolls
Ohio Double-Pour Rolls
Holl-O-Cast Rolls
Chilled Iron Rolls
Denso Iron Rolls
Nickel Grain Rolls
Special Iron Rolls
Nirolloy Rolls
Flintuff Rolls



THE OHIO STEEL FOUNDRY CO.

LIMA, OHIO • PLANTS AT LIMA AND SPRINGFIELD, OHIO

Automotive Production

(U. S. and Canada Combined)

WEEK ENDING	CARS	TRUCKS
Jan. 8, 1955	158,331*	21,970*
Jan. 1, 1955	129,514	18,922
Jan. 9, 1954	125,622	26,796
Jan. 2, 1954	72,903	20,390

*Estimated. Source: *Ward's Reports*

ing the sound insulation between the engine and the passenger compartment.

Many troublesome noises require the most delicate detection work to locate their origin. A recent example cited by Mr. Apps was some generator noise that was found to be coming from the current regulator. It was found that the generator was sending out a tiny current of 250 microwatts which came into the current regulator as electric energy and came out as mechanical vibrations to the fire wall.

Tire Noise Perplexing . . . At the moment, the most perplexing, and recent, sound problem appears to be attributed to tire roughness. This is universal throughout the industry this year. Tire manufacturers as well as automakers are working together to get to the bottom of it.

Independents:

1955 Nash and Hudson look different, share major components.

The 1955 lines of Hudson and Nash provide the answer to what measures the merged independents must take and are taking to survive in competition with their larger opponents.

These divisions of American Motors, now on display at the Chicago Automobile Show in advance of later introductions, show a high degree of integration of manufacturing, utilization of common parts, sharing of extras and other components, and product reciprocity with others in the same situation.

The basic feature is the common body shell that will be used in both Hudson and Nash. It employs the unit type construction made famous by Nash and enables both cars to be con-

structed in the same plants in Wisconsin.

The best example of product reciprocity is the V-8 engine offered by both Nash and Hudson. Although these engines have distinctly Nash and Hudson names, they originated in the new engine plant of the Studebaker-Packard Corp. Packard's Twin Ultramatic is offered as a companion transmission.

In addition, both cars will share Nash's All-Season air conditioning unit, Airliner reclining seats, and the twin travel beds.

American has done a fine job of employing the same basic body for a terrific cost savings and still creating distinctive stylings for Nash and Hudson. About the only similar identification feature is the wraparound windshield common to both.

Front Ends Different

Front ends are entirely different, with Hudson having headlamps recessed in the front fenders while Nash, in a revolutionary move, has located its headlamps inside the grille in a manner similar to that of the Nash-Healy.

The forward end of Nash front

AUTOMOTIVE NEWS

fenders is entirely rounded off with only the parking lights located on the leading edge. The parking lights stay on with the headlights, acting as "running lights" to indicate the full width of the car.

Both cars offer a 208 hp V-8 engine in their top series with three straight 6's to round out a full range of choices of power.

Late Debut A Handicap

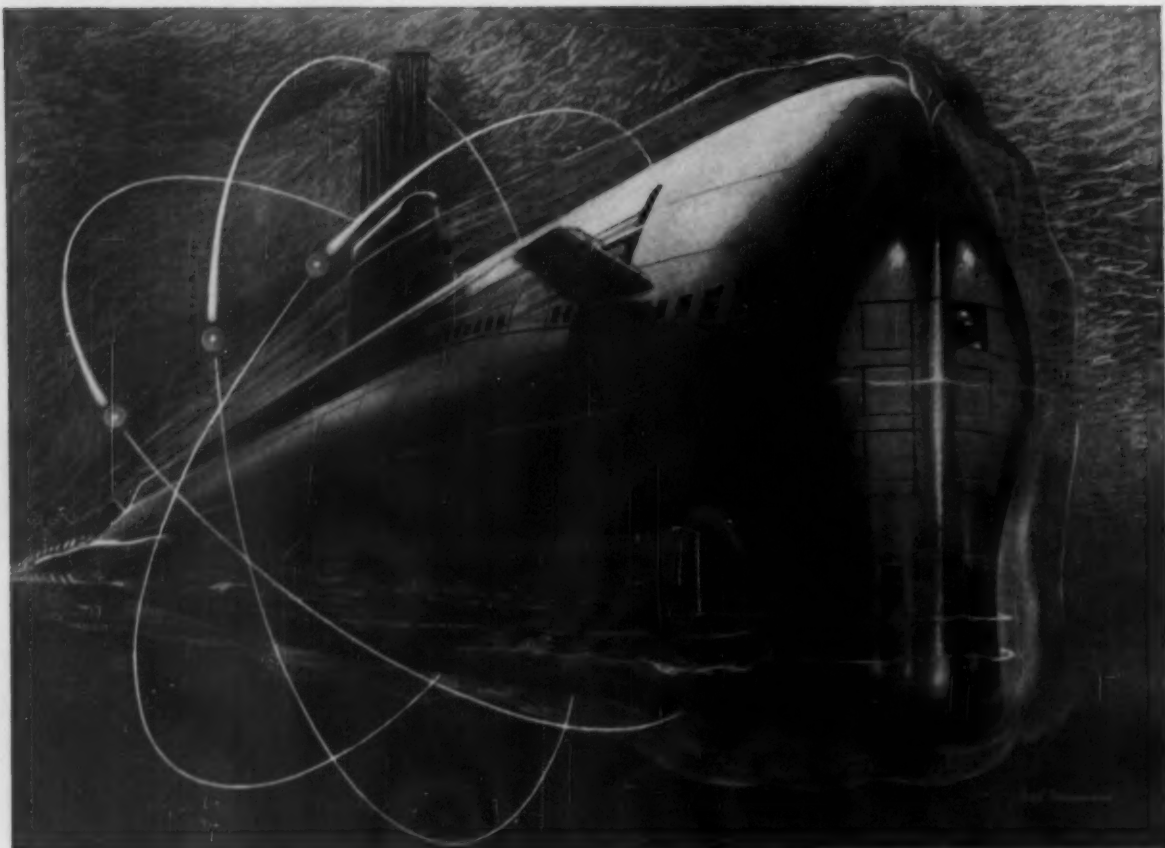
American's lines will have the handicap of a late entry into the 1955 model race in that all except Packard and Kaiser-Willys were on sale at intervals from early fall through December of 1954. The magnitude of the problem of integrating manufacturing and design and engineering clearly shows why.

Strides made by Studebaker-Packard as well as American indicate that the management of the independents is making all possible haste to solve the traditional problems of independents.

THE BULL OF THE WOODS

By J. R. Williams





THE "NAUTILUS"

**Atomic Sub and Builders Rely on World's
Greatest Lubrication Knowledge**

With the launching of the "Nautilus"—world's first atomic-powered submarine—the U.S. Navy crossed the threshold of the atomic age.

Socony-Vacuum is proud that it has been able to play a dual role in this most significant event.

First, famous Socony-Vacuum lubricants are now protecting vital machinery aboard the "Nautilus."

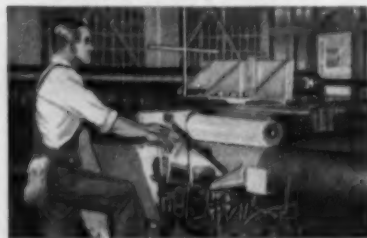
Second, Electric Boat Division, Gen-

eral Dynamics Corp.—builder of the "Nautilus"—relies 100% on our lubricants and a program of Correct Lubrication to protect its plant equipment... has done so for the past 34 years!

We wish the "Nautilus" and her crew all success...pledge our continued cooperation, in every way possible, to the Navy and its suppliers, toward the end of keeping America and her allies strong.



A snorkel intake tube being machined to very precise tolerances on one of the large lathes in the Groton plant.



Hydraulic bender shapes section of 8-in. steel pipe in two minutes. This operation formerly took a full day.

SOCONY-VACUUM *Correct Lubrication*
FIRST STEP IN CUTTING COSTS

SOCONY-VACUUM OIL CO., INC., and Affiliates: MAGNOLIA PETROLEUM CO., GENERAL PETROLEUM CORP.





What's Inside The Velvet Glove?

Behind the syrupy talk of bipartisan cooperation, politics will go on as usual . . . Foreign policy may be exception . . . Balanced budget still possible . . . Curb technical information—By G. H. Baker.

♦ **YOU CAN DISCOUNT** all that syrupy talk from leading Democrats and Republicans about the bright outlook for "bipartisan cooperation" in Congress this year.

The two-party system just doesn't operate that way in the U. S. The Democrats, having tasted victory in last November's elections, believe they are well on the way to capturing the White House next year. As a result, they see absolutely no reason to give aid to the Republicans, who will fight tooth and nail to retain it.

Probably there will be one big exception—foreign policy. There are dissident members in each party, but Ike will be able to muster big blocs of Democrats as well as Republicans when it comes to voting approval of his foreign proposals.

May Balance Budget . . . A balanced federal budget for the new fiscal year is a definite possibility, despite the gloom that oozes from official Administration statements.

Treasury Secretary Humphrey isn't ready to say so yet, but he has high private hopes that Congress will trim the new money bills to fit the government's limited purse.

This is not necessarily a naive hope. Mr. Humphrey is no longer a political novice. He fully appreciates that the Democrats have no incentive to solve the financial problems of the Republicans. What he's banking on is the firm prospect that responsible Democrats of the caliber of Sen. Byrd of Virginia will help key Republicans hold the line on spending.

In addition, there is good reason (still unofficial, but substantial) to believe that Treasury receipts—particularly from corporation income and from excises—may prove to be higher than the Treasury currently is counting on.

Less Dope for Reds . . . First firm government order calculated to shut off the flow of vital technical data to Communist countries goes on the federal control books as of Jan. 15. It was drafted principally by R. Karl Honaman, a Bell Telephone executive "on loan" to the U. S. Dept. of Commerce.

Two new types of government export licenses—general licenses GTDP and GTDU—comprise the

federal orders that ban technical data from unfriendly powers.

Dept. of Commerce says "technical data" is "any professional, scientific or technical information, including any model, design photograph, photographic negative, document, or other article or material containing a plan, specification, or descriptive or technical information of any kind which can be used or adapted for use in connection with any process, synthesis, or operation in the production, manufacture or reconstruction of articles or materials."

Secretary of Commerce Sinclair Weeks says Mr. Honaman's basic assignment is to withhold U. S. engineering data from countries

What's Inside The Velvet Glove?

Democrats speak openly of "cooperating" with Ike, but privately map grim strategy for ending Republican rule at the White House. Here's Mr. Eisenhower's timetable, what he wants and the probable reaction his programs will get:

Jan. 5—Congress convened.

Jan. 6—State of the Union:

Jan. 10—Foreign Trade & Lower Tariffs.

Jan. 11—Postal Rates & Gov't Pay.

Jan. 13—Military Training & Pay.

Jan. 17—Budget for Fiscal '56.

Jan. 20—Economic (General):

Jan. 24—Health:

Jan. 27—Highways:

Well received—on the surface.

Stiff opposition—from both parties.

Package deal can succeed.

Universal training at hand.

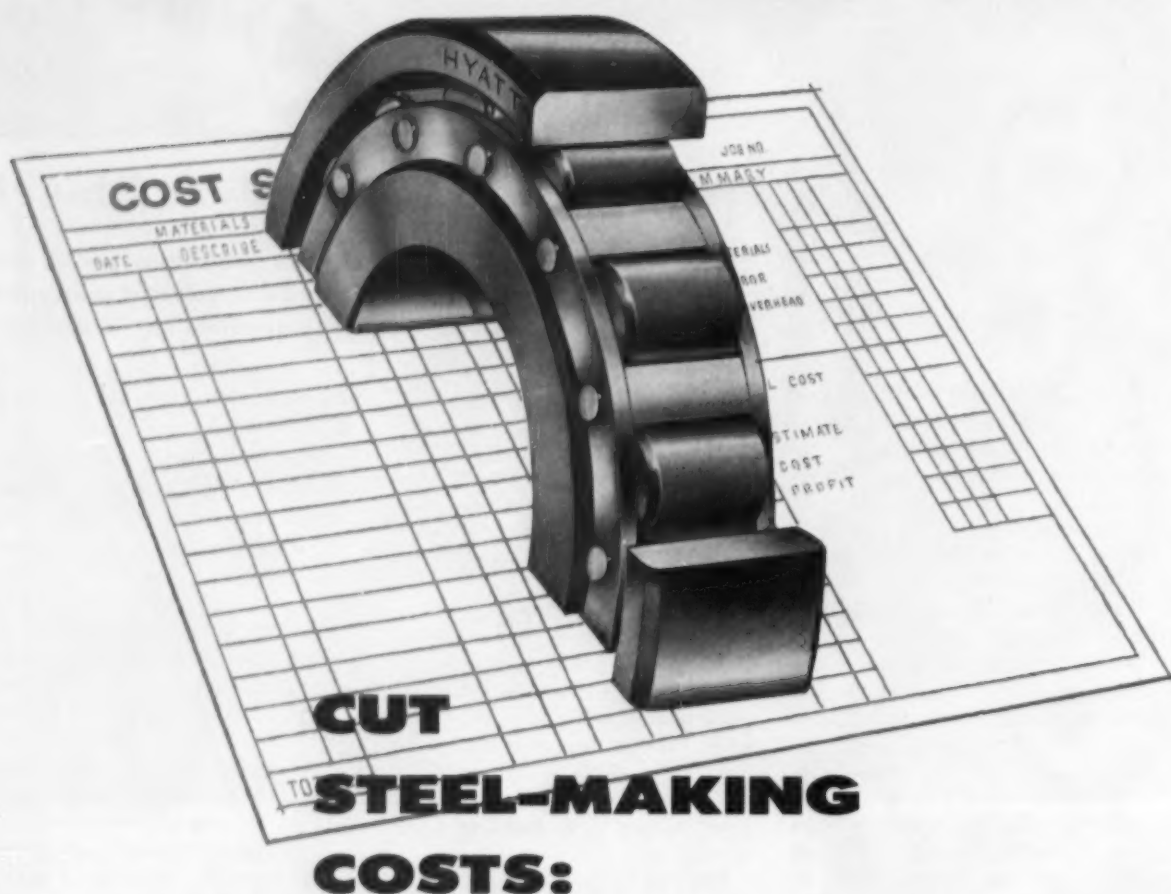
Look for boost in Ike's sums.

This one is just out for the air, say Dems.

Gov't health plan? Not this year.

Definite start on bold new plans.

HOW HYATTS CAN HELP YOU...



**Always
specify
or replace
with ...**



The secret of operating economy is to keep your production rolling at *peak efficiency*—and what equipment has more bearing on this than the hidden bearings you so seldom see or think of? (Seldom, that is, until one fails and writes its record in red on your cost sheet!)

That's why so many major steel mills standardize on Hyatt Roller Bearings in their rolling tables, lineshafts, cranes, motors, cars and similar vital applications. Down through the years, Hyatts have conclusively proved they *save power—extend equipment life—last longer with less maintenance*. In the long run, the *best* bearings you can buy are the most economical—HYATTS!

HYATT

ROLLER BEARINGS

STRAIGHT

BARREL

TAPER

HYATT BEARINGS DIVISION • GENERAL MOTORS CORPORATION • HARRISON, NEW JERSEY

that might some day use it against the U. S.

Up Minimum Wage . . . Congress will probably go along with President Eisenhower's request for a 20 pct increase in the minimum wage—from the present 75¢ per hour to 90¢ per hour.

Argument used by the President is that the increase would be "fair and equitable" at this state of the nation's economic development—with prospects of a rising economy to near the all-time high during 1955. The same program was proposed by the Labor Dept. last year, but was turned down at the White House level because prospects then were for a declining economy.

The recommendation is a compromise between the \$1.25 minimum wage demanded by unions; the \$1 minimum asked by some "liberal" congressmen, and the "leave-us-alone" approach of others.

Little chance of success, however, is believed awaiting a proposal that some 7 million to 10 million workers in the wholesale, retail and service trades not now covered by minimum wages be added to the 24 million workers who do come under the Fair Labor Standards Act.

Reject Quota Bid . . . President Eisenhower, in another "free-trade" decision, rejected a bid by American manufacturers for an absolute quota on imports of iron and steel wood screws.

The President based his decision not to impose a quota on screw imports on the fact that the ratio of imports to consumption has tended to decline over the past several years. He discounts an argument that declines in domestic production are caused by imports.

Ease Export Controls

U. S. Bureau of Foreign Commerce adds 35 commodities to the list of nonstrategic goods which may now be shipped to Hong Kong without an individual export license. Included are liquid and plastic bituminous coatings, pearl lacquers, rubber clothing

and druggist's sundries, and unmanufactured wood and sawmill products.

In another action, BFC removed from the nonstrategic list several commodities, including fountain and ball-type pen parts containing iridium or ruthenium, fluorescent ready-mixed paints and pyroxylin coated or impregnated fabrics treated with or containing teflon. These goods may be shipped to Hong Kong now only under an individual export license.

Labor:

Court rules firms may fire "Fifth Amendment" employees.

A firm may legally fire an employee who invokes the Fifth Amendment when questioned by government agencies as to possible communistic and other subversive affiliations. A federal judge rules that the amendment does not guarantee that a person who invokes it will not be subject to any "unfavorable inference" or that he will be continued in his employment.

Was Cause for Firing

The ruling came in the case of General Electric Company's firing of 23 members of the United Electrical Radio and Machine Workers of America who hid behind the Fifth Amendment when questioned about Communist connections. The union was expelled from the CIO several years ago as Communist-dominated.



"I just don't feel up to it this morning."

WASHINGTON NEWS

The union had asked the court to rule that the firings were a violation of a collective bargaining agreement. Judge Charles F. McLaughlin ruled that the discharges under a GE policy that use of the Fifth Amendment was cause for firing did not constitute an interference with constitutional rights.

The judge found that the firings came under a clause permitting dismissal without warning for "obvious cause," because the company was threatened by loss of good will; unrest among other employees, and doubts as to the security of employees and plants.

Standards:

Name advisory bodies to link government, science, industry.

A dozen technical area advisory committees are now working with the National Bureau of Standards under a new program designed to provide a direct link between government and the industrial science and technology fields. Scientific and engineering societies name committee members in the fields of physics, chemistry, mathematics, metallurgy, ceramics and electrical, radio, engineering.

Duties of the committees, all organized during 1954, are twofold: (1) To represent formally the interests and needs of industry and interpret its point of view to the Bureau, and (2) to assist the Bureau on more detailed problems.

Seek Improved Metals

In the field of metallurgy, the Bureau is engaged in determining the structure and properties of metals and alloys and the effect of various factors on structure and behavior under normal and abnormal conditions. Hope is that new and improved metals and alloys may be developed.

The metallurgy program is reviewed by an advisory committee designated by the American Institute of Mining and Metallurgical Engineers.

SITUATION UNDER CONTROL

BY KEOKUK

CHIEF KEOKUK:

"Me no need teach Little Chief—him say modern generation learn make teepee on TV!"

PRINCESS WENATCHEE:

"As usual he has the situation well under control!"



KEOKUK



ELECTRO-METALS COMPANY

KEOKUK, IOWA

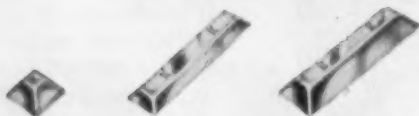
WENATCHEE DIVISION, WENATCHEE, WASHINGTON

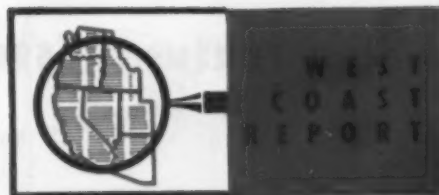
The way for you to keep the cost and quality situation under control is to use Keokuk Silvery Pig Iron! Due to it being a less concentrated form of silicon, it assures less silicon waste. Car for car, pig for pig, its uniformity never varies. Charge it by magnet or count.

SALES AGENT: MILLER AND COMPANY

332 S. Michigan Ave., Chicago 4, Illinois
3504 Carew Tower, Cincinnati 2, Ohio
8230 Forsyth Blvd., St. Louis 24, Missouri

Keokuk Silvery . . . the superior form of silicon introduction for steel plants and foundries . . . available in 60 and 30 lb. pigs and 12½ lb. piglets . . . in regular or alloy analysis. Keokuk also manufactures high silicon metal.





Aircraft Industry To Climb In '55

Will build fewer but bigger bombers . . . Jet tanker contracts presage U. S. passenger jetliners soon . . . Commercial airframe output last year topped '53 . . . Construction outlook good—By R. R. Kay.

♦ **AIRCRAFT** manufacturers on the West Coast are confident their business will flourish through 1955 and 1956. And in 1957, there could well be a new buildup program, with missiles replacing some planes now in production because these would then be obsolete.

Number of units delivered in 1955 will decline slightly from 1954, but total airframe weight will be about the same. Employment will be stable throughout the year.

Raise Bomber Output . . . Plane-building emphasis may shift to big jet bomber production. This will be especially good for Seattle's Boeing Airplane Company, builders of the B-52. Jet fighter production should keep at about the same level, but military transport manufacture may ease up during the next two years.

Although 90 pct of the industry's activity here is in military aircraft, last year was a top year for commercial business. And this year should be just as good or better. West-Coast-built transports led the world by a wide margin in 1954—191 units, 36-passenger or larger, sold for over \$251 million. Going into 1955, the companies have firm orders for another 190 transports, to sell for nearly \$270 million.

Anticipate Commercial Jets . . . Another healthy sign: Anticipated military contracts for bigger and faster jet tankers should open the door wide for U. S. entry into the passenger-jetliner field. Boeing, Douglas, and Lockheed are com-

peting feverishly for this business.

Huge figures indicating aircraft manufacturers' backlogs will shrink. But don't be alarmed. This doesn't mean less business. There's a Defense Dept. change in the way orders will be fed out.

Let Short-order Contracts . . .

Up to now, the Pentagon wrote an order for the entire number they needed of each type of plane. Under the change, they'll order only a small number of the total purchase at a time. This will make modifications based on flight experiences more efficient. So, look for big backlog figures to lose significance as aircraft business barometers.

Sizable new orders start the year off well: Lockheed Aircraft Corp., Burbank, Calif., has a \$38.7 million Navy contract for more hump-backed, pot-bellied early-warning radar aircraft; Hughes Tool Co., Culver City, Calif., got

a \$28 million Air Force contract for modifications and spare parts for electronic control systems; and Goodyear Aircraft Corp., Goodyear, Ariz., has \$4 million in new orders for Boeing, Convair, and Douglas sub-assemblies.

Buy Tool Firm . . . In line with its program of diversification, U. S. Industries, Inc., bought the assets of Fray Machine Tool Co., Burbank, Calif. With its Clearing Machine Corp. presses and Axelson lathes, the Fray purchase puts U. S. I. into the machine tool industry in a bigger way.

More Engineering Projects . . .

Volume of heavy engineering projects—the kind that gobble up lots of steel—is expected to jump 12-14 pct this year in the 11 western states.

1955 seems likely to be bigger than 1954 and probably will approach record 1953.

Consulting engineers and bidding agencies say many good-sized projects are in the offing. Highway work will continue at an accelerated pace. And if Congress approves President Eisenhower's mammoth highway program, road building will jump even more sharply.

Utilities plan some big jobs to put the finishing touches on expansion programs.

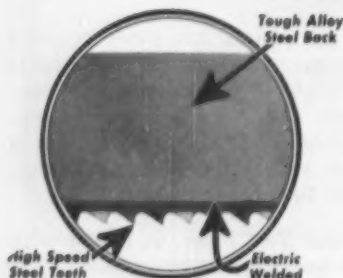
Daily Construction Service reports \$118 million less spent in 1954 than in 1953, when heavy construction work totalled over \$3.4 billion.

Spending for machinery and supplies in 1954 will probably be \$51 million ahead of 1953.



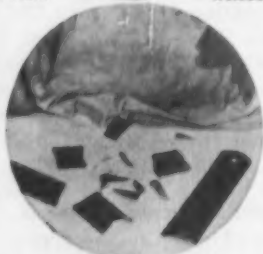
"My wife gave me heck at breakfast. I can hardly wait to get down to the office and take it out on someone."

Features Essential to Top Hack Saw Blade Performance



UNBREAKABLE—to saw FASTER.

Composite construction (a narrow high speed steel tooth edge electrically welded by the MARVEL-invented process to a tough, non-brittle alloy steel body), means that MARVEL high-speed-edge can be subjected to the MAXIMUM feed pressure that any hack sawing machine is capable of applying. MARVEL blades need not be "babied" for fear of breakage!



SHATTERPROOF—for SAFETY.

MARVEL blades never shatter or "explode" as do the ordinary "brittle" blades shown at left which so often cause personal-injury accidents such as the loss of an eye or severe laceration and expensive damage to the sawing machine. Operators who use MARVEL blades exclusively soon "get the habit" to apply heavier feeds, greater blade tension, higher speeds—to do their work faster, because they know they are SAFE with MARVEL.



SHARPER, PREMIUM-STEEL TEETH—to wear LONGER.

Teeth are accurately machined by a MARVEL-invented process that assures sharper tooth points and positive uniformity of tooth shape and degree of set from end-to-end of every MARVEL blade. The steel used in the tooth edge is carefully selected from the finest high speed steels available throughout the world, regardless of cost or source—truly premium steels, without premium cost.



QUALITY CONTROL—to assure UNIFORMITY.

With more than a quarter century of *experience* in inventing, perfecting, and producing welded-edge hack saw blades, MARVEL has provided its own laboratory with the most modern metallurgical instruments and techniques known to the applicable sciences for the specific purpose of maintaining highest possible quality control. Coupled with rigid tests and meticulous inspection of every MARVEL blade, uniform quality is assured.

These are only a few features that make MARVEL High-Speed-Edge Blades such outstanding performers.

Ask for the latest MARVEL Cutting Tool Bulletin and the name of your closest MARVEL Distributor.

Manufactured only by
ARMSTRONG-BLUM MFG. CO. • 5700 West Bloomingdale Avenue • Chicago 39, U.S.A.





MACHINE
TOOL
HIGH SPOTS

Tool Prices Lag Labor and Materials

In past 15 years prices of machinery rose 78 pct, while all industrial commodities went up 97 pct . . . And wages in the machinery industry went up 167 pct, more than twice machinery—By E. J. Eagan, Jr.

♦ **MACHINERY** and equipment prices since 1939 increased less than one-half as much as machinery industry wages in the same period. And in the duplicate 15-year span, machinery and equipment prices also lagged substantially behind the upward spiral in industrial commodities, iron and steel products, nonferrous metals and construction costs.

The Machinery & Allied Products Institute developed these revealing price ratios recently. Machine tool builders hope the statistics will add weight to their sales argument that "machine tools are cheaper than ever."

Tools Rose Less . . . Indeed, the MAPI facts could make some of the tougher machine tool buyers a bit less eager to habitually discount what salesmen tell them. Here is what the record shows:

Between 1939 and October, 1954, wholesale prices for machinery and equipment rose 78 pct. In the same period, average prices for all industrial commodities except farm and food products increased 97 pct.

Now match the 78 pct rise in machinery prices with other, more specific cost factors. In the same 15-year period prices of iron and steel products went up 110 pct, nonferrous metals climbed 132 pct and construction costs zoomed 153 pct. Current machinery prices would seem to be at bargain levels solely by comparison.

Wages Gained Most . . . But the term "bargain" takes on added emphasis when MAPI pinpoints

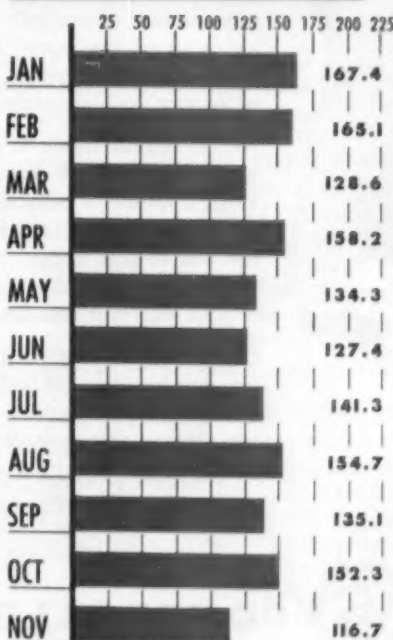
the wage rise in the machinery industry since 1939. Hourly wage rates have jumped steadily from the 1939 average of 73¢ to an alltime high of \$1.95 in October of last year. This is a 167 pct increase, more than twice as much as machinery prices rose in the same period.

Is this machinery price lag something new for the industry? No, it isn't. MAPI traces records from 1922 to show that it has been going on since that time, at least. But the trend has accelerated significantly in the past 15 years.

Gap Growing . . . From 1922 to 1941, machinery and equipment prices declined at an annual average rate of about 1.13 pct in relation to average hourly wage figures. But from 1939 to 1954, the declining machinery price rate speeded up to average about 2 pct annually in its drop behind wages.

At first glance, this lag in machinery and equipment prices compared to other industrial cost factors might seem ominous for builders of these items. Especially when the 32-year record shows that the average annual drop has been getting bigger since World War II.

GEAR INDEX 1954



Base: 1947-49 = 100

Source: American Gear Manufacturers Assn.

Hope For Sales . . . But the MAPI report takes another view, actually makes a positive, encouraging point to machinery builders and users alike. It states that important, beneficial increases in equipment productivity have made it possible, even desirable, for machinery prices to lag behind other items. This being so, MAPI says these lower prices give industry an important stimulus for wider use of the newest, most efficient tools.

Air Materiel Command personnel at Dayton, Ohio, are developing specifications for \$84.6 million worth of long-leadtime machine tools. Equipment will be bought by the Air Force with Vance Plan funds made available by the 83rd Congress.

Tools will reportedly be for aircraft industry use in a national emergency. Major types will include large milling, boring and turning machines and presses.



Top: Clark Control Center for furnace control at Bohn Aluminum and Brass Corporation, Adrian, Michigan.

Insert: Separate access doors to vertical wireways simplify installation, inspection, service and maintenance.

SEPARATE VERTICAL WIREWAYS

Simplify installation and servicing of

CLARK CONTROL CENTERS

Roomy 6-inch wide vertical wireways for each section, independent of starter compartments and equipped with separate access doors, save time and money on installation of Clark Control Centers, and make them easier to service and maintain.

Ample wiring space is provided for all load and inter-wiring connections. Terminal boards may be located in vertical wireway adjacent to starters or at top or bottom of any section. Versatile bus-bar compartments permit the use of one to four sets of electrically isolated horizontal bus, permitting power to be fed from any or all of four different sources.

Clark Control Centers are the easiest to pre-plan and lay out because adding transformers and/or relays or changing type of construction (NEMA type A, B, or C) does not change space requirements.

Write for your copy of the 24 page illustrated book entitled "Control Centers by CLARK."

The **CLARK**  **CONTROLLER** *Company*
Engineered Electrical Control 1146 East 152nd Street • • Cleveland 10, Ohio



The Iron Age

SALUTES

Robert P. Petersen

New frontiers of science are the everyday concern of this nuclear physicist who switched from brilliant pioneering in one field to another one which offers even greater challenges.

"Nuclear physics," says Dr. Robert P. Petersen of Republic Steel Corp., Cleveland, "has vast possibilities for the steel industry. In particular the application of nuclear materials should be of immeasurable importance to this area of our economy."

Bob Petersen, who heads up Republic's nuclear research program, is uniquely qualified to make such a prediction. As chief of the Industrial and Production Reactors Branch of the Atomic Energy Commission before joining Republic last year he was at the very forefront of development of practical reactors.

Some of the goals toward which he is working are outlined by Bob: "It is within the realm of possibility that by producing heat from a reactor at the source of ores, atomic energy may play an important part in the economic concentration of low-grade iron ores."

"Republic was one of the first users of radioactive materials in tracing the progress of raw materials," Bob points out. "I feel that the same basic principles might be adopted in learning

more about such problems as the dispersion of alloy material in a heat of steel. Successful work in this field might well lead to better steels."

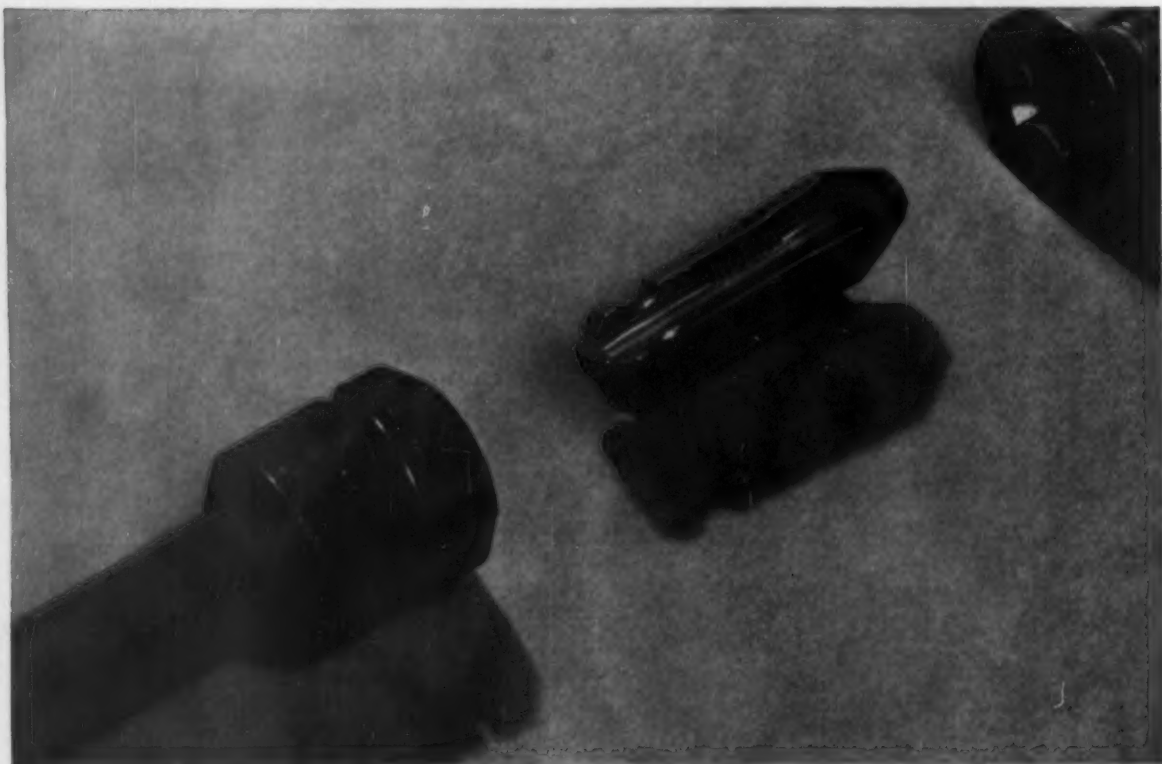
A native of Los Angeles Bob received his bachelor's and master's degree from the University of California's Los Angeles branch, then moved up the Coast to Berkeley for his doctorate.

During the years 1941-49 Bob worked at the Applied Physics Laboratory of Johns Hopkins University on the proximity fuse, fire control and guided missiles.

From 1949 to '52, as director of research, he worked in the development of atomic weapons at Sandia Corp., the AEC's ordnance laboratory.

Summing up his program at Republic, Bob says, "Briefly what we are trying to do is to control the energy release of the atomic bomb for the use of industry. Great steps have been taken in that direction by the AEC in developing the atomic submarine and other reactors." It is hardly necessary to add that Bob Petersen deserves a large measure of credit for those steps.

YOU CAN COUNT ON CONTINENTAL FOR EVERY FASTENER NEED!



Phillips "**Bits-Holders-Screws**" are Exclusive with Continental!

Here's how they can boost your output

Only the Continental Screw Co. offers this three-way fastening combination to increase your output. Phillips *bits, holders, and screws* now make power-driving really practical—even on your finished parts.

The Continental record speaks for itself. Continental Phillips Bits have driven as many as 1,000,000 screws without replacement. They average from 2 to 4 times

longer life than other bits, and have cut fastening costs as much as 50%.

This cost-saving operation might help in your plant. And remember, Phillips bits, holders, and screws are exclusive with Continental.



Continental Screw Co.

Manufacturers of Holtite Fastenings

NEW BEDFORD, MASSACHUSETTS, U. S. A.

The Iron Age INTRODUCES

Sylvan F. Chappuis, named president, Toledo Porcelain Enamel Products Co., Toledo.

Mark C. Craven, appointed vice-president, Pittsburgh Operations, Follansbee Metals Corp.

Frank B. Powers, elected vice-president and sales manager, Burnside Steel Foundry Co., Chicago. **James L. Jackson**, appointed assistant sales manager, and **Joseph E. Egan**, becomes assistant to the president.

William S. Patterson, becomes vice-president—Sales, The Hill-Chase Steel Co., Baltimore.

Dr. R. H. Lueck, elected vice-president in charge of Research and Technical Dept., American Can Co.

Hobart C. Ramsey, becomes chairman of the board, Worthington Corp., Howard Bruce, elected chairman of the executive committee. **Edwin J. Schwanhauser**, becomes president, and **Clarence E. Searle**, will continue as a director but is retiring as vice-chairman of the board.

Howard H. Casey, appointed director of sales, The Midvale Co., Philadelphia.

Alton R. Eshbach, appointed chief accountant, Jones & Laughlin Steel Corp., New York Ore Div., Star Lake, New York.

Omer E. Robbins, elected a director, Ex-Cell-O Corp., Detroit.

Andrew R. Wardrop, appointed general manager, Dearborn General Manufacturing Div., Ford Motor Co.

Clinton B. Fleming, appointed chief industrial engineer, Laclede-Christy Div., H. K. Porter Co., Inc.

R. S. Rockafellow, appointed staff industrial engineer, Automotive Body Div., Chrysler Corp., Detroit.

William Niessen and **Kenneth F. Potter**, appointed assistant chief engineers, American Hoist & Derrick Co., St. Paul.

William H. McCormick, appointed manager of sales, Park Alloy and Carbon Div., Crucible Steel Co. of America; and **Herbert Whelan**, appointed warehouse merchandising consultant.

E. J. Weller, named manager of tool sales, Carbology Dept., General Electric Co.

Alan G. Grey, appointed manager of structural and bar sales, Kaiser Steel Corp., Oakland, Calif.

R. E. Kroeck, appointed manager of manufacturing, General Metals Corp., and **B. A. Robbins**, becomes manager of engineering, Enterprise Div.

PERSONNEL



CARL F. NORBERG, elected president, The Electric Storage Battery Co., Philadelphia.



JOHN E. HAIG, appointed president, Ajax Electric Co.



JOHN C. MOLINAR, elected vice-president, Niles-Bement-Pond Co., West Hartford, Conn.



M. R. MINNICK, appointed vice-president—Sales, The American Welding & Manufacturing Co., Warren.

January 13, 1955

Michael P. Apostolik, becomes manager, Wheeling Steel Corp., New York district sales office.

A. F. Boone, named manager of control stamping sales, Mullins Manufacturing Corp., Salem, O.

Leo J. Kevitt, appointed manager of manufacturing, Alemite lubrication equipment and Stewart-Warner instrument division, Stewart-Warner Corp., Chicago, and Edward G. Wicklatz, becomes manager of Alemite and instrument engineering.

John K. Campbell, appointed manager, Pigment Div., National Lead Co.'s Southwestern Branch, Dallas headquarters.

R. S. Carson, appointed district manager, East Central Territory, The Oilgear Co.

A. G. Neese, promoted to manager, Stainless and alloy sales, Sharon Steel Corp.; T. H. McBain, promoted to district sales manager, Chicago sales district; W. C. Beck, joins New York District sales office.

Norman H. Perreault, appointed manager, Reliance Steel Div., Eastern plant, Hamden, Conn., Detroit Steel Corp.

Neill S. Brown, named general manufacturing manager—body and assembly group, Studebaker-Packard Corp.; and Earl M. Douglas, becomes general manufacturing manager—foundry, engine and transmission group.

John A. Peloubet, rejoins the Magnesium Dept. Technical Service and Development Group, The Dow Chemical Co.



R. J. COMPTON, named vice-president, E. W. Bliss Co., Canton.



T. W. KUHN, elected executive vice-president, Bohn Aluminum & Brass Corp., Detroit.



R. L. ALLSHOUSE, elected a vice-president in charge of foreign and flat product sales, The Aetna-Standard Engineering Co., Pittsburgh.

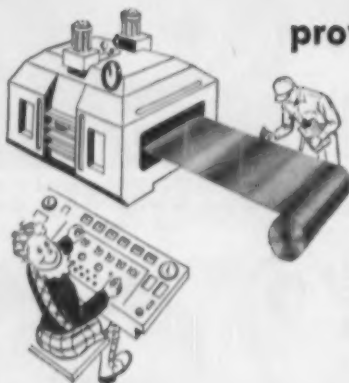


JOHN W. TODD, appointed assistant general manager of sales-administration, U. S. Steel Corp.

**MicroRold®
Stainless Steel**

"Thinness Control"

provides strip *Quality*
in SHEET *Sizes*



Remarkable uniformity of gauge in MicroRold Stainless Sheets up to 36" wide.

The "Thinness Control" used in the manufacture of light gauge MicroRold Stainless Sheets assures you of the same dimensional accuracy as in strip stainless. Specified gauge thicknesses may be rolled in sheet sizes with tolerances as low as 3% average (plus or minus) as compared to the A.I.S.I. allowable of plus or minus 10%. This results not only in weight savings but also in fabricating economies.

Regular use of MicroRold Sheet can give you more stainless area per ton or the equivalent area with lesser weight.

MicroRold Stainless Steel Sheets are available up to 36" wide and in gauges from .005 in commercial grades, finishes and temper.

Ask your steel warehouse distributor for MicroRold with "Thinness Control"

Washington Steel Corporation

Washington, Pennsylvania



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10/29	R-174328	36143
11/1	A-174328	94 -
11/2	G-20337	820337
11/3	P-96729	96729
11/4	G-20937	1075 -
11/5	M-6472	6472
11/5	J-266	
11/8	P-20	20
11/11	G-392141	703050
11/9	A-81470	81470
11/9	A-7211	7211
11/9	M-340729	4425
		240
		03
		271
11/10	M-192788	6191
11/11	A-201111	3826
11/11	G-647201	18433
11/12	R-195432	12230
11/12	J-214066	814295
11/12		77
11/12	S-200101	422798

**LOOKING
FOR WAYS
TO CUT
SLAG HANDLING
COSTS?**

**the answer
is here!**



JOHNSTON CORRUGATED CINDER POTS

...HAVE LONGER LIFE... they outlive other pots... proved by records

...PROVIDE FASTER TURN-AROUND TIME

...LOSE LESS TIME AT THE SLAG PIT through easier, speedier, cleaner dumping.

...REDUCE MAINTENANCE TO A MINIMUM... base suspension of the pot eliminates distortion and breakage.

These are the ways Johnston Cinder Pots can assure lower cost-per-ton slag handling. They are available for blast furnace, open hearth or electric furnace operations—in sizes to serve all slag handling operations.

MACKINTOSH-HEMPHILL COMPANY

Makers of the rolls with the striped red wabblers
PITTSBURGH AND MIDLAND, PA.



MACKINTOSH-HEMPHILL PRODUCTS INCLUDE: all types of cast mill rolls... Improved Johnston patented corrugated cinder pots and slag handling equipment... Mackintosh-Hemphill rotary straighteners... electronically controlled contouring lathes... screw feed roll turning lathes... heavy duty engine lathes... shears... end-thrust bearings... steel and special alloy castings... reversing hot strip mills... Y-type cold strip mills.

MAKE THIS TEST

Place Johnston Corrugated Cinder Pots side by side with other pots on your slag train. Give them the same treatment day by day. Be sure to keep a record of performance. It won't be long until you'll convince yourself that for lower costs you must join the trend to Johnston Corrugated Cinder Pots.

Write today for the bulletin describing and explaining all the features of Johnston Corrugated Cinder Pots.

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FUEL OIL TANK



GASOLINE TANK



GASOLINE PUMP
STAMPINGS



HYDRAULIC
RESERVOIR



CONDENSATE
PUMP TANK



PERSONNEL

Robert P. Gehring, appointed sales manager, Cayuga Machine & Fabricating Co., Inc.

E. Forrest Baker, appointed product manager in charge of sales program for forgings, Kaiser Aluminum & Chemical Corp., Erie, Pa., plant.

Louis S. Mann, appointed general sales manager, Daubert Chemical Co., Chicago.

David F. Christnelly, appointed assistant sales manager, Stearns Magnetic, Inc., Milwaukee.

J. D. Hayes, Jr., appointed assistant general manager, Explosives Dept., Hercules Powder Co.

OBITUARIES

William C. Frye, 77, director, Chain Belt Co.

William W. Vosper, 79, founder of The Toledo Pipe Threading Machine Co.

Carl L. Wehrle, comptroller and purchasing agent, Ramsey Chain Co., Inc., Albany.

Frank H. Gale, 83, advertising pioneer, retired manager of conventions and exhibits, General Electric Co., after a brief illness.

Duncan W. Fraser, 79, retired board chairman, American Locomotive Co., New York.

Glenn C. Wilhide, 58, chief engineer, The Black & Decker Mfg. Co., suddenly of a heart attack.

Harry E. Howard, 61, personnel manager, Norton Co., Worcester, Mass.

Harry E. Eyster, traffic manager, and assistant sales manager, The J. E. Baker Co.

5-Way Profit

Another case study of money-saving casting inspection with **MAGNAFLUX***

1. Eliminates rejecting finished parts because of cracks
2. Prevents processing of defective parts
3. Increases salable volume by 5%
4. Replaces visual inspecting with $\frac{1}{4}$ the manpower
5. Reduces inspection time from $8\frac{3}{4}$ to $1\frac{3}{4}$ man-hours per ton of parts

At Peoria Malleable Casting Company, with their old visual inspection system, 5% defective castings were processed through annealing and grinding and later scrapped. Worse, the cause of the defects went undetected. This meant continued scrapping, greater time loss, higher production costs. Peoria Malleable produces rough castings, and finishes many, for tractor housings, clutch and brake pedals, etc.

The problem was solved by "Correctioneering"—using a Magnaflux-Magnaglo* unit to detect defects early, in *rough* castings. Time is no longer wasted on defective materials and this early



Typical parts inspected at high speed, in high volume, with Magnaglo at Peoria Malleable Casting Company.

detection makes the cause of defects much easier to spot and correct. Since 1952, when the Magnaglo unit was installed, there have been almost NO CUSTOMER RETURNS for cracks. Customer good will is insured.

With the Magnaglo unit, *anyone* can inspect with 100% accuracy. One man now takes $1\frac{3}{4}$ hours to inspect a ton of castings, whereas it formerly would have taken four men a total of about $8\frac{3}{4}$ man-hours.

Whether you make castings, carburetors, cranes—or just about anything else—ask for our booklet to study profitable savings for you. Write today for "FINDING THE 'HOW AND WHERE' OF LOWER PRODUCTION COSTS."

MAGNAFLUX



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Ease and simplicity of operation of Magnaglo unit gives 100% inspection accuracy

It's Cast Iron

**Republic Pig Iron used
in developing porcelain
cast iron cookware
only $\frac{1}{10}$ " thick**



with a FEATHERWEIGHT feel!

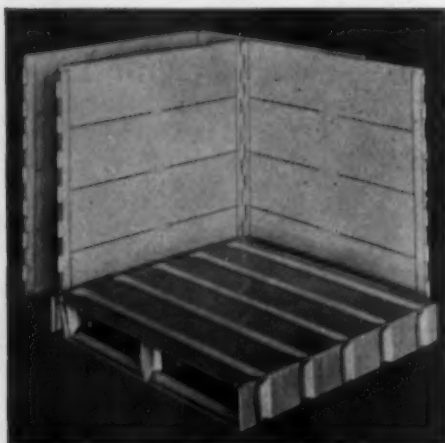
The finished castings for this new product have a uniform, tight grain with a good enameling surface. In fact, the manufacturer, Prizer-Painter Stove Works, Inc., of Reading, Pa., is able to apply enamel directly to the cast surface, eliminating the need for a base coat. Prizer-Ware is strong and durable. Yet, it is only one-tenth of an inch thick.

Casting requirements called for an extremely fluid, clean pig iron with no porosity. A Republic pig iron metallurgist was called in to work with Prizer personnel. He recommended the proper grade of pig iron without hesitation or prejudice—because Republic is the only producer of all grades of merchant pig iron.

Close cooperation between customer and the Republic pig iron metallurgist is not unusual. Why not make it a practice to call him in whenever you need help? There is no cost or obligation.

REPUBLIC STEEL

World's Widest Range of Standard Steels and Steel Products



Collaps-a-tainer, the steel box that folds flat, can reduce your cost of interplant shipping. Have your traffic manager figure your cost of returning empty containers. Then compare with savings possible from using the Collaps-a-tainer. Four collapsed units ship in the space of one open unit. It's easy to assemble, lightweight, strong and durable and easy to knock down. Collaps-a-tainer can also be used on the production line or as a storage bin. It stacks to any practical height. Standard size, 30" x 30" x 30", weighs approximately 100 pounds.

To help improve foundry efficiency and economy during molding, moving, storing and shipping operations, Republic makes a complete line of steel boxes, skids, pallets and flasks. They are built to your specific requirements. Republic Pallet Racks and Steel Shelving provide additional space-saving economy—help simplify your handling problems.



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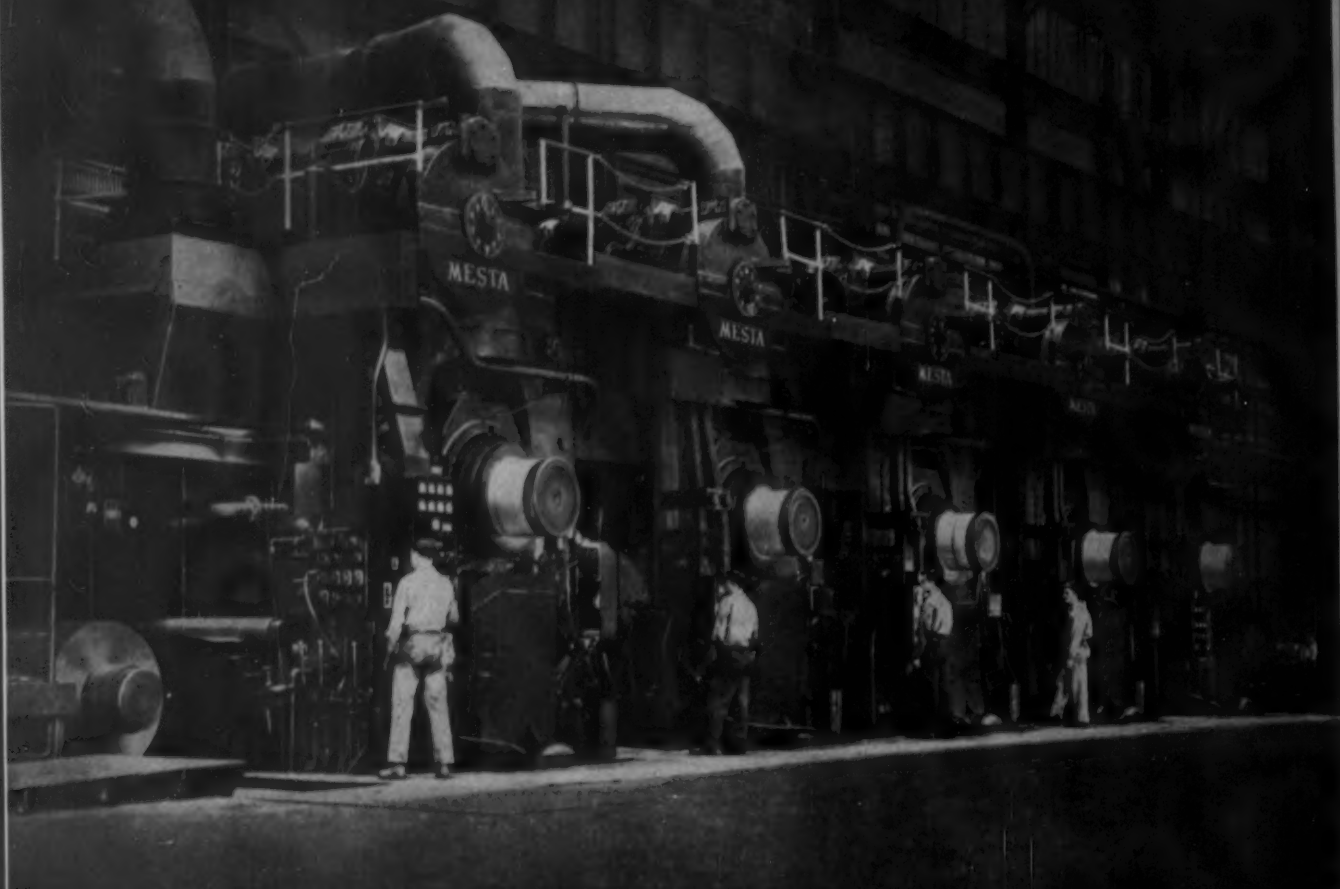
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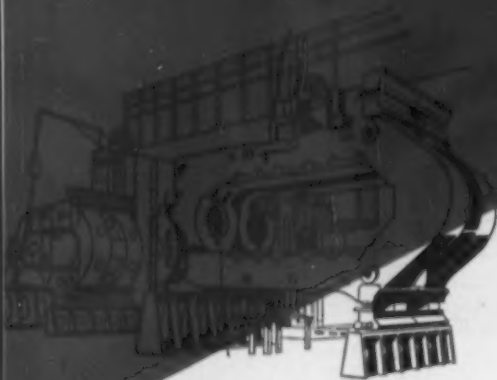
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SIMULTANEOUSLY MACHINING ROLLING MILL HOUSINGS IN PAIRS ON MESTA HEAVY DUTY DRAW-CUT SHAPERS

Designers and Builders of Complete Steel Plants

MESTA MACHINE COMPANY

PITTSBURGH, PENNSYLVANIA

On steel, cast iron—



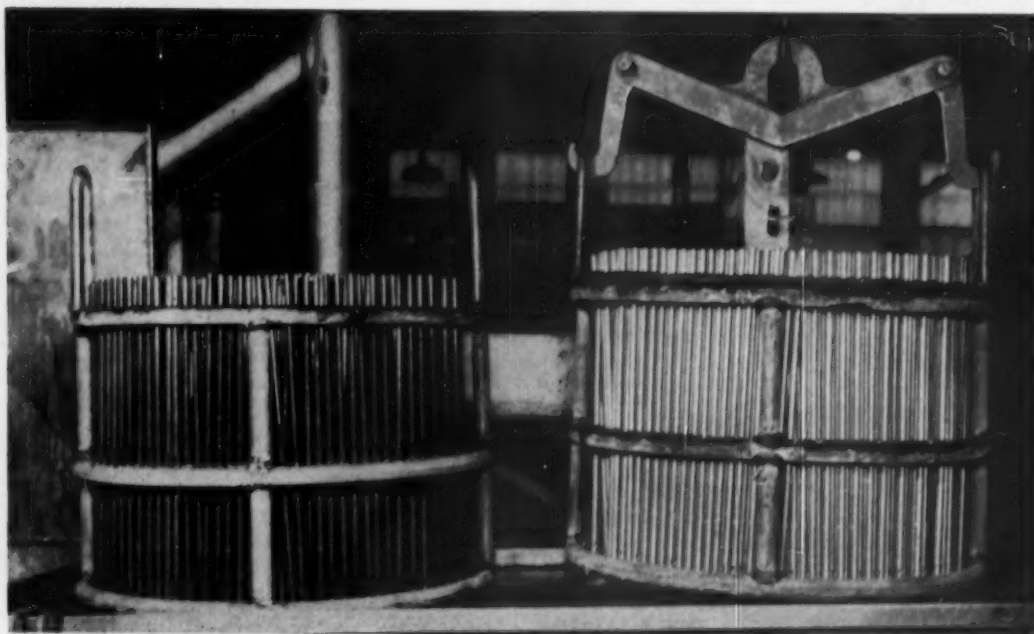
Steam Oxidizing Provides Better Paint Base

♦ One of the difficulties of painting steel or cast iron is poor adhesion . . . To overcome this, various chemical treatments are used . . . Entrapped chemicals sometimes cause trouble by bleeding . . . Preparing steel or cast iron surfaces by steam oxidizing can remove these difficulties and also reduce the cost . . .

By L. E. RAYMOND, Chief Metallurgist,
The Singer Manufacturing Co.
Bridgeport, Conn.

♦ THE TREATMENT of steel and gray cast iron to obtain an oxidized surface by processing in dry steam at elevated temperatures, has proved itself as a method of obtaining a practical paint base. Assemblies have satisfactory paint adhesion and can be treated at a cost estimated at 20 to 25 pct less than that required for chemical surface preparation.

One of the major difficulties in the painting of the ferrous materials has been the lack of adhesion of the organic coating to the metal. Chipping or flaking of paints from the base metal has been one of the principal drawbacks



SHAFTS or other parts that make surface contact must be racked before steam oxidizing.



TRAYS of sewing machine parts are ready for loading into furnace workbasket.

of this method of finishing. To overcome this disadvantage, many types of surface pre-treatment have been employed.

These pre-treatments may be roughly divided into two specific types. The first is the formation of inorganic films of varying thicknesses on the surface of the metal, while the second is the oxidation of the surface of the steel to a thin, dense, tight magnetic oxide of iron. The adhesion of the paints to either of these surfaces is much greater than to surfaces of ferrous alloys in the untreated condition.

One difficulty is encountered when using these preparatory coatings that are formed by chemical treatment. It is often necessary to treat as a unit, a fabrication that has been assembled by spot welding, projection welding, bolting, or by riveting. A serious objection to pre-coating one of these assemblies, especially when oxidizing in the alkaline caustic-nitrate bath, is the frequency of entrapment of chemicals between the parts of the assembly. This causes bleeding of the chemicals, particularly during baking after painting and results in flaking, peeling or scaling of the organic coating.

Steam treating at one plant is done in a Leeds & Northrup pit type sealed retort, forced circu-

lation furnace. Heat is supplied by electric heater windings. A fan mounted on the bottom of the furnace, provides forced circulation of the steam over the heaters and through the work basket. The metal retort providing the sealed chamber, is located between the heater windings and the insulation.

Use standard furnace

A steam inlet is provided at the bottom of the furnace, and a flapper valve in the cover permits steam to escape to the atmosphere so that additional steam may be admitted and to maintain constant furnace pressure. This furnace is a modification of the standard high temperature L & N tempering furnace.

Steam oxidizing is simple to perform, requiring only a few precautions. Parts that are of irregular section and will not nest or wipe together may be dumped in trays. However, if the parts, such as regularly shaped stampings or rods, offer considerable areas of contact to each other, it is necessary to rack or stack them to make sure the contacts are points rather than lines or areas. After loading in trays or racks, the work, including the trays, should be vapor degreased.

The degreased trays are then placed in the work basket and lowered into the furnace which

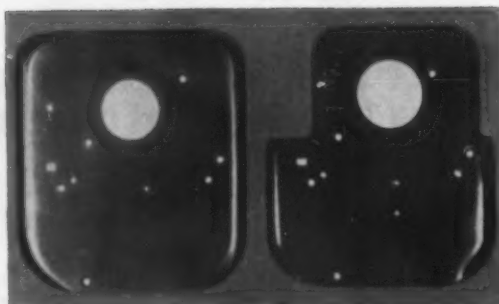
"Oxidized parts may be stored for months by covering tote boxes with VPI wrapping . . ."

has been preheated to 650°F. When the furnace has recovered its temperature, the flapper valve is opened, steam at 5 psi is admitted and the temperature controller reset to 750°F. After the load has reached this higher temperature, the purging is continued for fifteen minutes when the flapper valve is closed and the processing continued for another thirty-five minutes.

The steam is then shut off, the flapper valve opened, the cover swung aside, the work removed and permitted to cool. Due to the amount of work that may be treated by this method, it is good practice to have a high speed fan blow air through the basket to speed up the cooling. This reduces the amount of cooling area and the number of work baskets required. With three work baskets available and a fan for rapid cooling, it is possible to process seven loads of steel in an 8 hour day with a furnace that will take a 22-in. diam x 26-in. deep basket.

After placing the work in tote boxes that are dry and free from oil, the oxidized parts may be stored for months if a sheet of vapor phase impregnated paper is placed over each box of work as soon as the box is loaded. In this way the parts stay clean and there will be no evidence of rust when the painting operation is done.

The surfaces of cold rolled steels or of me



STEAM oxidized sewing machine cloth plates as oxidized, left, after painting, right.

chined steels, if not rusty, are suitable for oxidizing with only a degreasing operation necessary. Spring steel, hardened other than in an endothermic atmosphere or a reducing salt bath, and hot rolled steel, must be first cleaned either by shot blasting or tumbling.

Gray cast iron must also have a clean, shot blasted or sand blasted surface. The treatment for the cast iron is similar to that for steel except that after loading at 650°F and the introduction of the steam, the furnace temperature is raised to 1200°F. After purging at this temperature for fifteen minutes, the flapper valve is closed and the work processed for two hours.

Although L & N steam homo furnaces were developed primarily for tempering high speed steel they are now finding wider application for paint base preparation. Steam oxidizing with this equipment can be made nearly automatic through standard control instruments.

DEGREASED parts are loaded into a workbasket, then placed in a steam homo furnace.



New Construction Features Insulated Porcelain Enamel Walls

♦ **USE OF PORCELAIN ENAMEL** panels for outer building walls is being characterized as a significant trend in construction technology. This technique is used extensively on a new project of the Radio Corporation of America, Cherry Hill, N. J., which is nearing completion.

The project, which will house offices and engineering laboratories, consists of five structures covering a total building area of 320,000 sq ft—equivalent to an average 35-story office building.

Condensation runs off

The completed sandwich panels which form the major part of the front and rear wall areas are only 2½ in. thick. Each panel is 8 ft long and 4 ft high. A smooth metal skin forms the interior. A 2-in. thickness of Foamglas, a cellular glass insulation made by the Pittsburgh Corning Corp., is cemented to this. Between the insulation and exterior surface of corrugated porcelain enameled steel is a small air space.

The cellular glass insulation was chosen because (1) it is rigid and would not sag or distort

in the panel, and (2) being composed of sealed glass cells, it is moisture-proof. When condensation forms, it will simply run off the face of the insulation and down and out the base of the panel.

The smooth inner surfaces are in pastel colors—green, blue, gray and terra cotta—not only to relieve eye strain, but to make use of all available light.

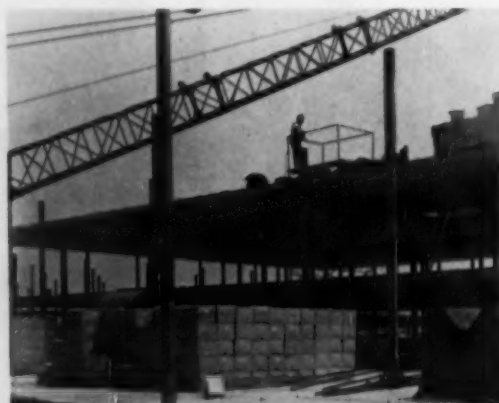
Using an airplane bomber engine and a water deluge, the panel was given a structural and physical test equal in force to a rainstorm driven by a 100 mph gale. The panel remained completely rigid and showed no leakage.

The buildings were erected by the Lift-Slab method, a technique in which the reinforced concrete floors and roof are constructed on the ground and hoisted into position. The roof insulation and roof finishing materials are loaded on the roof slab and hoisted with it.

Foamglas was also specified for roof insulation because of its rigidity and high compressive strength (100 psi). These features make catwalks unnecessary to handle the anticipated foot traffic.



SUCTION DEVICE allows workmen to install insulated panels quickly, easily. Walls are only 2½ in. thick, giving more usable space.

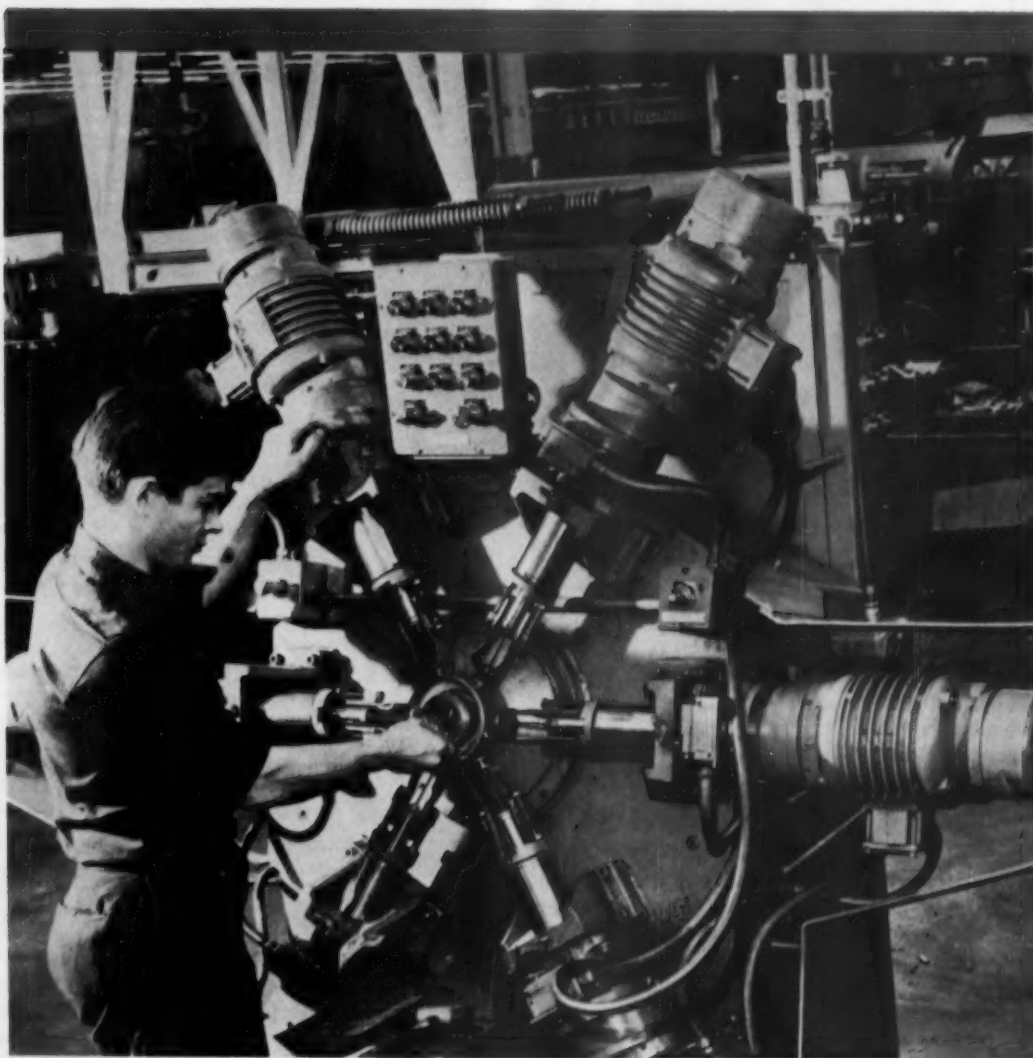


LIFT-SLAB method of construction speeds erection and allows more work to be done on ground. Before lifting, materials are put on slab.

Emphasis on Quality Guides New Tooling Program

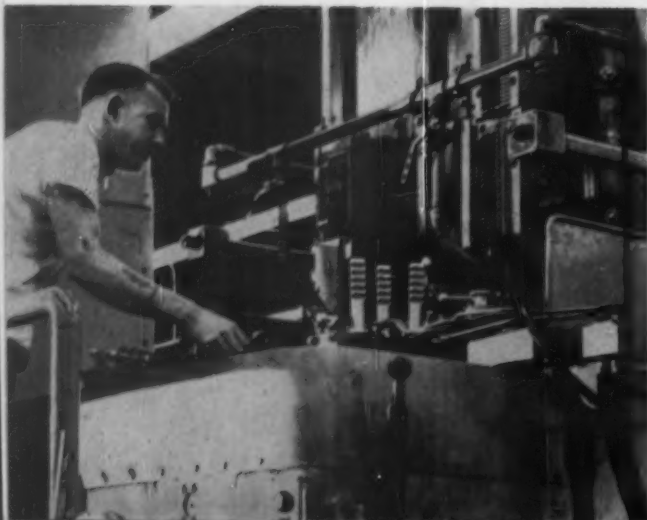
♦ To make and assemble 50 new type power steering units per hour, Chrysler installed 413 machine tools at its Trenton, Mich. plant . . . Precision, to ten-thousandth of an inch, is the watchword at this large new installation.

♦ MORE THAN 500 new machine tools and items of heat treating, blasting and other equipment were needed to tool Chrysler's new "Co-axial" power steering plant at Trenton, Mich. The new full-time, integral type power steer-



By W. G. PATTON, Asst. Technical Editor

SPECIAL machine simultaneously drills six passages in the piston body for high pressure hydraulic fluid. Both ID and OD of this heat-treated malleable part are finished ground.



Top, left

TEETH are broached in the rack end of the lower piston rod which engages the sector gear to transmit force to the steering linkage. The rack and sector gear are carburized.

Top, right

PISTON valve body, made of four precision ground rings and a spacer, is assembled on an arbor, pressed into a piston jacket. Arbor is removed to finish grind and hone the body ID.

Bottom, left

WORM gears and connectors are color-coded into four tolerance groups. Parts in any group do not vary over 0.0005 in. Assemblers match colors on mating parts to eliminate "play."

ing unit is being made available on all Chrysler-built 1955 models. It is expected that at least 65 pct of all new Chrysler and De Soto cars will carry the accessory. A smaller but sizeable percentage of Dodge and Plymouth models will feature it also.

Labor saving devices

Advantages claimed for the new steering aid include simpler design, fewer parts, ease of installation and minimum service problems. The unit, called Coaxial because it lies along the axis of the steering column, has only 78 parts compared with 94 parts in the previous Hydra Guide unit.

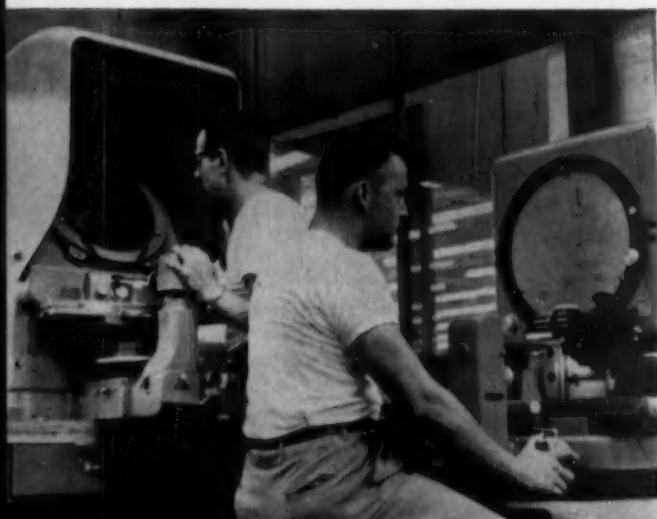
Over 400 new milling, drilling, boring and honing machines are used for an output of 50 units per hour. More equipment will permit eventual production of 100 units per hour. In addition to machine tools, the plant has 127

pieces of new heat treating, impregnating and shot blasting equipment.

The Trenton plant offers an interesting example of tooling a comparatively low production plant for precision manufacturing. While high volume, fully automated machine tools are not warranted, the firm's engineers built many partially automatic labor saving devices on precision equipment.

The new power steering package consists of three major operating assemblies; the rack and sector gear, a recirculating ball nut assembly and the hydraulic piston and valve assembly. Heart of the new device is a double-acting piston controlled by a spool valve within the piston unit. The spool valve directs high pressure hydraulic fluid flow through a system of passages to provide the necessary power assist.

Teeth are broached in the rack which forms



Top, left

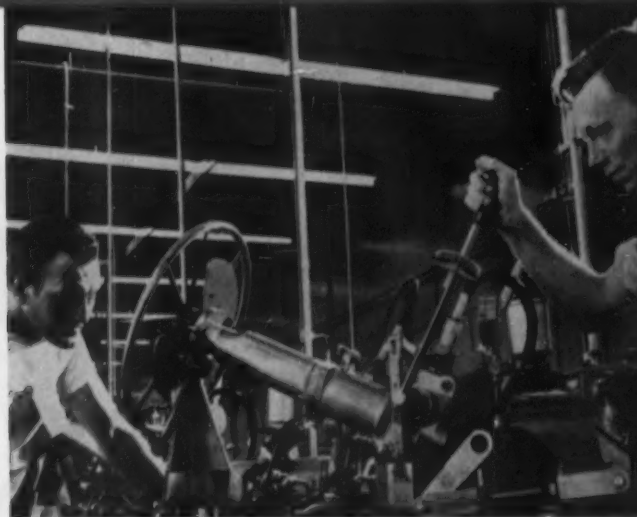
Optical comparators check ball bearing race contours on both the worm gear and the ball nut end of the connector. Many other precision inspections insure accurate performance.

Bottom, left

BORE of the steering unit's lower housing is honed to a 15 microinch finish. Then each housing is washed, checked for porosity and again inspected before final assembly.

Bottom, right

FINAL assembly check is made with torque wrench, balanced steering wheel, other precision instruments. Unit is set for 7½ ft-lb maximum effort to turn front wheels.



the end of the lower piston rod. This rack engages the sector gear to transmit force to the steering linkage. Both the rack and sector gear are carburized.

A special machine drills six high pressure hydraulic fluid passages in the piston body. Prior to drilling the oil holes, the heat-treated malleable cast iron piston is finished ground both inside and outside.

To maintain the tolerances required, selective fitting is necessary. For example, worm gears and connectors are sorted into four groups and color coded. Variation between parts in a single group does not exceed 0.0005 in. Assemblers match the colors, thereby insuring close fits and freedom from "play" in the assembly.

Modern checking instruments are used extensively. Optical comparators, for example, check contour of the ball bearing race on the worm gear and in the ball-nut connector end. Special

gaging and checking machines, including special centering machines for checking the piston and valve assembly, are also used. Dimensions on some of the steering unit's moving parts are held to tolerances of 0.0002 in.

15 microinch finish

Manufacturing operations include machining upper and lower aluminum housing units, with faces held square within 0.0005 in. Bore of the lower housing is held to a 15 microinch finish.

The piston valve body is made up of four precision rings and a spacer; these are assembled on an arbor. After assembly, the valve body is hot pressed into the cast iron piston jacket. Power steering units for Imperial, Chrysler and DeSoto cars are assembled on one line. A second table-top conveyor is used to build the Dodge and Plymouth units.

Why Stainless Is Hard To Cold Head

♦ Forming speed is a vital factor in difficulties encountered in cold heading stainless steel . . . As forming speed rises, stainless rapidly becomes more brittle . . . Time between blows, in operations requiring more than one blow, sharply affects ductility . . . A dozen iron-nickel-chromium alloys were tested for cold heading limits.

♦ STAINLESS STEEL does not head up as readily as plain carbon steel. This fact has posed a problem for bolt makers and others who use stainless steels in high speed heading operations. To find the causes of this phenomenon, The Case Institute of Technology, Cleveland, conducted a thorough study of the problem for Chandler Products Corp. of Cleveland.

By **W. M. BALDWIN, JR.**, Research Professor,
and **C. A. BEISER**, Research Assistant
Dept. of Metallurgical Engineering, Case Institute of Technology, Cleveland

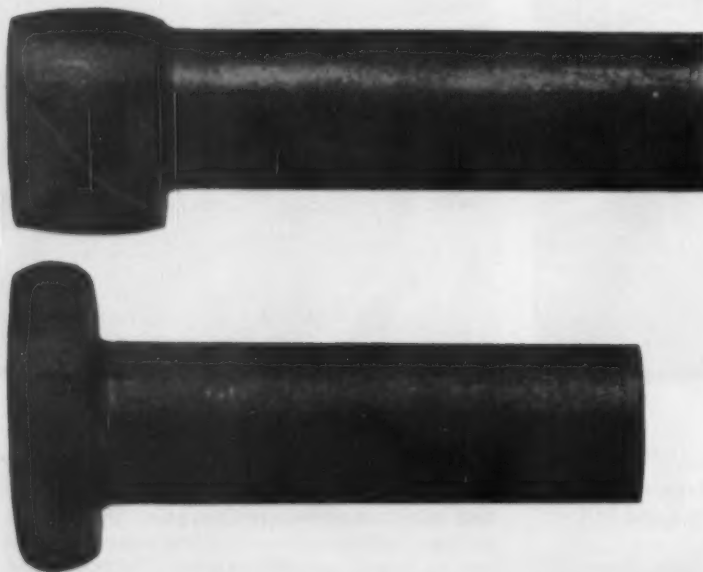
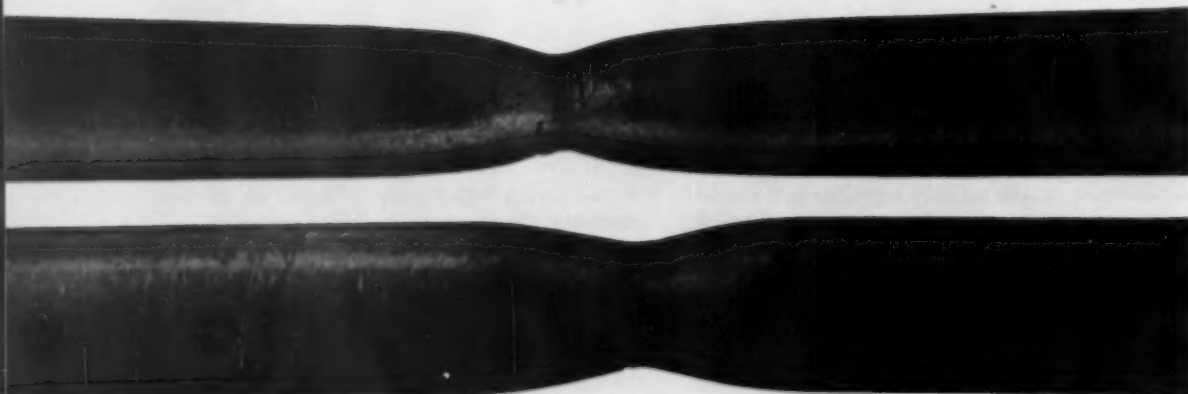


FIG. 1—Stainless 0.284-in. wire (302), left, cracked before head expanded 40 pct in diameter. SAE 1038 carbon steel, left below, of same size cold heads to twice original diameter.

FIG. 2—In tensile tests on wires shown in Fig. 1, quarter hard stainless steel, below, shows greater contraction in area than 1038 6 pct drawn carbon steel wire, bottom.



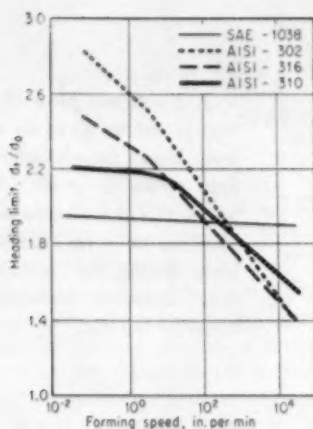


FIG. 4—Cold heading limit of 1038 plain carbon steel drawn 6 pct, 302 stainless steel and 316 stainless steel, both quarter hard, and 310 stainless steel drawn 17 pct compressed between flat open dies at various speeds. Note sharp deterioration in performance of stainless at high speeds.

The evidence that stainless steel does not head up as well as plain carbon steel is seen in Fig. 1. The 302 stainless has cracked before the head is half formed while the plain carbon steel has headed up readily. Tensile tests on these same wires, however, show the stainless to have a much higher ductility than the plain carbon steel, Fig. 2.

A simple compression test used

Most of the experimental work was based on a simple compression test of the type shown in Fig. 3. An 0.284 in. diam wire was supported in a female open flat cold heading die, while a second flat open die compressed an 0.562-in. free length of the wire. Because the exact moment of fracture could not be observed conveniently when the metal was in the die, a succession of tests was run at increasing amounts of compression.

The entire series of samples was inspected for edge cracks on the head. The cold heading limit was taken as the expansion in wire diameter that fell between the largest successful expansion and the smallest expansion where a crack was seen. The only cracks taken into consideration in this evaluation were shear failures of the type seen in Fig. 1. Vertical splits caused by seaminess were ignored since the investigation was not concerned with a study of wire quality.

These compression tests were carried out at a variety of forming speeds. The dies were brought together at a snail's pace of 0.05 ipm to 10 ipm in a tensile testing machine. Commercial forming speeds of 400 ipm and up were made on a vertical type punch press, a cold header, or a guillotine-type drop hammer.

Forming speed proved to be the crux of the

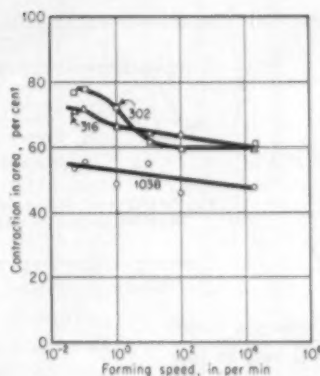


FIG. 5—Tensile tests on stainless steels from which data in Fig. 4 are drawn show a drop in contraction in area at high speeds, but it is nowhere near as sharp as the drop in cold heading limit.

problem. As Fig. 4 shows, plain carbon steel can be cold headed to about twice its diameter no matter what speed is used, but stainless steel while it can be expanded to about three times its diameter at slow speed, can be cold headed to a diameter that is only about 40 pct larger than its original diameter at speeds of about 19,000 ipm. This trend is so precipitous that it would appear to be *glass brittle* at speeds of 500,000 ipm.

The surprising thing about these results is not so much that the ductility of stainless steel drops with increasing forming speed—qualitatively this fact has been known for some time.^{1,2} The surprising thing is the *degree* of embrittlement that faster forming speeds bring on.

Cold heading details studied

The novelty of this finding resides in two facts. First, the great bulk of results relating to the change of ductility of stainless steel with forming speed cover only a fraction of the range of speeds studied here. Second, almost all of the results on this subject pertain to ductility as determined in a tensile test. Strangely enough this ductility shows much less sensitivity to test speed than does cold heading. Tensile tests, Fig. 5, on the same wire from which the heading results of Fig. 4 were derived showed much less strain rate sensitivity than did the cold heading tests themselves.

If the bolt manufacturer accepts the fact that stainless steel can be highly sensitive to strain rate, he still wants to know if there is anything in his province which will allow him to process satisfactory stainless steel bolts. While he can "cold squeeze" bolt heads at a

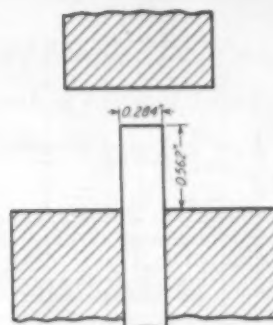


FIG. 3—Compression test squashed an 0.562 in. free length of 0.284 in. diam wire between dies. Other length to diameter ratios, different die shapes were also tested.

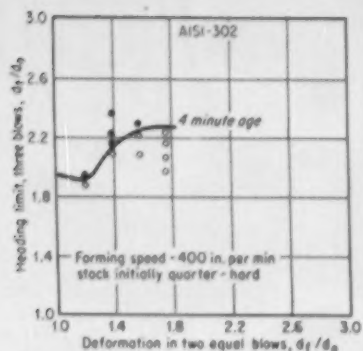


FIG. 7—A three strike design can improve heading limits provided the time interval is held to four minutes. At other time intervals it is expected this advantage no longer exists.

very slow speed this is not a commercial solution in the highly competitive bolt making field. Is there anything in the die design, or the details surrounding the processing of the metal that can prevent or minimize this "high speed embrittlement"? The details of cold heading were studied one by one in a series of tests to answer this question.

Different free length to diameter ratios, $L:D = 2.5, 2.0$ and 1.05 , were tested. As this ratio was lowered a slight benefit (at least in the commercial forming speed ranges) was discovered, though this was not sufficient to justify further inquiry.

Different die shapes were studied. While indented dies effected a small improvement in performance at commercial forming speeds, the improvement was so slight as not to warrant further study. Bolts were also headed over a wide range of temperatures ranging from -321°F to $+400^{\circ}\text{F}$. Warmer temperatures effected a small improvement.

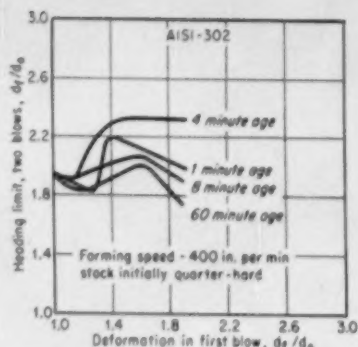


FIG. 6—A two blow design is not as good as a one blow design when first strike is small. A larger first strike increases heading limit for a two blow design for certain time intervals between blows of the die.

Because many heading operations are the result of two or more strikes the effects of two and three blows on the ultimate ductility of stainless steel was studied. In conjunction with this the time interval between the strikes was also carefully studied in the event that a time-dependent reaction going on in the metal was connected with the embrittlement (the embrittlement itself depends upon forming speed which is a time dependent variable.)

The limit could be lowered or raised

The cold heading limit could be lowered or raised at 400 ipm when two operations were used depending upon the time between blows and the amount of upsetting effected in the first strike, Fig. 6. If the first upset was small the cold heading limit was lowered for any time interval between strikes. If the first upset was reasonably large, the cold heading limit was raised and it was raised most sharply when the rest between blows was 4 minutes.

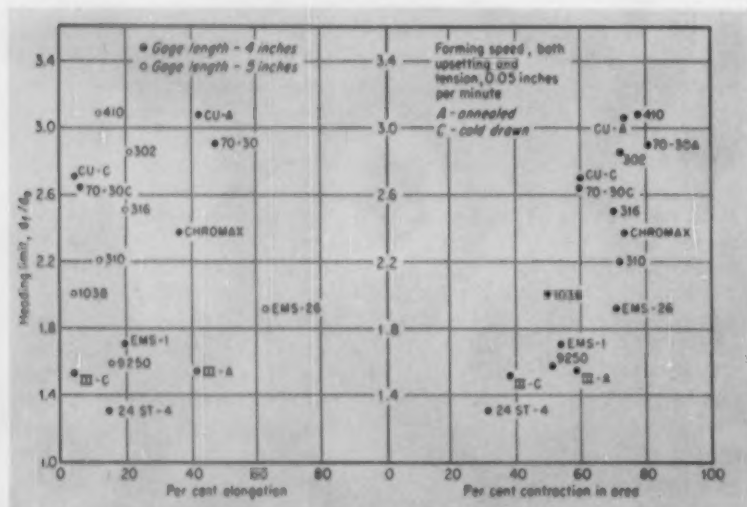


FIG. 8—Correlation between ductility measured in a tensile test and cold heading limit for slow heading operations.

"Although sizeable increases in the cold heading limit are possible in two blows, the time between blows is such a critical factor that a two strike design is not a commercial solution . . ."

It should be noted that with 1 hour between blows the first strike offers little advantage over one blow.

Although sizeable increases in the cold heading limit are possible in two blows, the time between blows is such a critical factor that a two strike design is not a commercial solution to the problem. A three blow design, with four minutes between strikes give some improvement in the cold heading limit, Fig. 7.

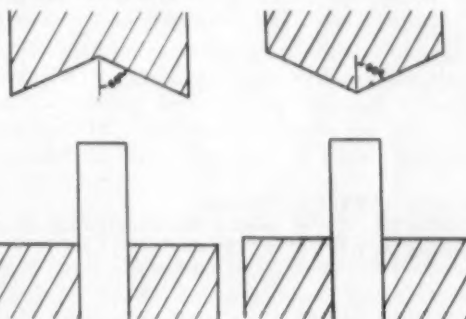
All these tests indicated that the bolt manufacturer can do little in his own operations to avoid the basic problem involved here. The next question was: Can some relief to high speed embrittlement be obtained through alloy selection?

Ductility, cold heading limit related

In surveying alloys for cold heading a crude correlation was found between ductility measured in a tensile test (if contraction in area was chosen as a criterion) and cold heading limit for slow heading operations Fig. 8. While this correlation covered a wide number of ferrous and nonferrous alloys it was valid for slow heading operations only (such as encountered in "squeeze" heading) since high speeds brought about the very embrittlement under discussion here in stainless steels but not in other alloys.

A dozen iron-nickel-chromium alloys were tested for cold heading limits at different speeds, Fig. 9. High speed embrittlement was not found in ferritic alloy steels or in pure nickel, Fig. 10. It was found in a wide range

of austenitic stainless grades, however. Even 25-20 stainless steel (grade 310) and Chromax (20-35) for example were embrittled when headed at high speeds. This underscores the fact that the phenomenon is not confined to those austenitic stainless steels that suffer an austenite-martensite transformation during deformation. In concurrent studies, not yet completed, the austenite-martensite transformation appears to have nothing to do with the high speed embrittlement.



DIFFERENT DIE shapes were studied but improvement, at commercial forming speeds, was slight.

REFERENCES AND ACKNOWLEDGMENTS

1. V. N. Krivobok and G. Sachs, Forming of Austenitic Chromium-Nickel Stainless Steels, International Nickel Co., 1947, p. 13. 2. Cooperative Study of the Effect of Rate of Strain on the Tensile Properties of Stainless Steel, Report of Subcommittee V on Mechanical Tests, ASTM, Vol. 44, 1944.

The authors thank W. H. Chandler, President, and R. H. Akers, Metallurgical Engineer, Chandler Products Corp. for their interest and help in this work.

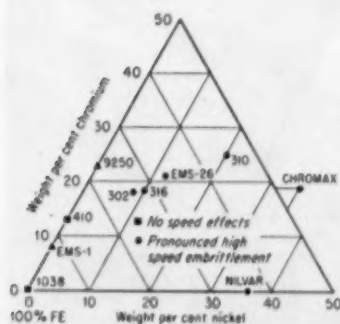


FIG. 9—Composition of alloys studied for high speed embrittlement. Wire condition: Annealed—Chromax, EMS-26, EMS-1, 9250, 410, Nilvar, Nickel; 6 pct drawn—SAE 1038; 17 pct drawn—310; quarter hard—302, 316.

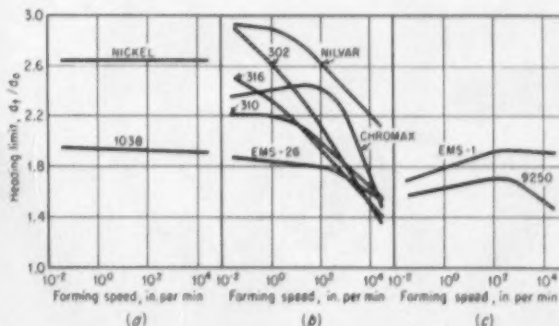


FIG. 10—Heading limits, 0.284 in. wires (for compositions see Fig. 9), at various speeds. All tests on 2:1 free length to diam ratio: (a) No speed effects (squares in Fig. 9); (b) Pronounced embrittlement (circles); (c) Hybrid effects (triangles).

Safety features—

Automatic Billet Grinder Triples Production

♦ A new automatic billet grinder does a fast full-surface or spot grinding job on alloy steel billets up to 5-in. square . . . Machine features push-button controls for automatic billet handling and uniform wheel pressure . . . With minimum effort, one man can process three times the tonnage he could handle on a swing grinder . . . Hydraulic controls are used for table and transverse motions . . . Others are pneumatic.

By W. K. LOWE, Chief Engineer
Crucible Steel Co. of America, Sanderson-Halcomb Works
Syracuse, N. Y.



OPERATOR merely observes whenever machine is set up for a fully automatic billet grinding cycle.

• **AUTOMATIC BILLET** grinders developed by Crucible Steel are finishing 3 to 5-in. square alloy and tool steel billets to a better surface in approximately one-third the time required by conventional swing-frame equipment.

Idea for a safe, flexible automatic machine was engineered at the firm's Sanderson-Halcomb Works to solve certain production and personnel problems inherent in swing grinders. The company built and installed two of the new machines. In their operating area they have improved grinding quality and also tripled production.

The company finds that it can employ a more skilled type of worker to operate the new equipment and train him thoroughly in minimum time. The operator has complete control of the machine and can switch from semi-automatic to fully automatic grinding as required. Protective features built into the equipment mean greater worker safety.

Production experience shows that a man operating the new Lowe equipment can finish grind about three times as much tonnage per given billet cross section than a single swing grinder operator. Heavy billet turning is done by the machine and no longer involves a hazardous physical effort.

Takes minimum effort

Basic features of the automatic grinder are its controls for positive, safe billet handling and for regulating and maintaining grinding wheel pressure. "Skinning" a billet uniformly with a swing grinder is often difficult because the operator cannot supply consistently uniform body pressure. But with the new machines, only a minimum of operator effort is needed for smooth surfacing or spot grinding.

Where it is difficult to find workers to do laborious swing grinding, the safety and comfort features of the new machines have an appeal. All moving parts are well guarded. The operator's control station is located so that a falling billet cannot come near him. It is impossible to start a machine operation without completing it. And each machine has its own dust-collecting system which leads to the outside of the building.

Table and transverse motions of the Lowe grinder are hydraulically controlled. All other motions are controlled pneumatically. The control console is at the front of the machine where the operator can watch the grinding operation. The console's eight control buttons and two hand operating levers are waist high. Each hand lever has two additional control buttons convenient to the operator's fingers.

With the billet table empty, pressure on one of the console buttons actuates the air cylinder on a loading table to deliver one rough billet. Pressure on the lower button in the right-hand lever energizes other air cylinders which position

and clamp the billet for grinding. Table motion starts by moving the left hand lever and table travel is controlled by preset limit switches. These require no resetting regardless of billet length.

To lower the grinding wheel onto the billet the operator pulls the right hand lever toward himself. Wheel pressure on the billet is automatically controlled and maintained by the position of this lever which is adjustable over the full horsepower range of the grinding wheel motor. For any material grade or billet condition, this setting will provide continuous, automatic, removal of a given amount of metal. Forward and reverse wheel motion is automatic.

Corner grinding on this automatic machine is handled in an efficient manner. As the grinding wheel passes over the corner of the billet, wheel pressure is reduced and transverse motion increased. This eliminates any over-grinding.

When the operator has ground the first rough surface to the required finish, he moves the right hand operating lever to the extreme forward position. This lifts the wheel from the billet. To unclamp the work, the operator simply steps on a foot control.

To turn the billet to the next rough surface the operator squeezes the top button in the right-hand lever. Releasing the foot switch reclamps the billet in the new position. The grinding cycle is then repeated until all four sides and corners are ground.

Should the operator wish to spot grind at any point, he has complete control flexibility. The left hand control lever can be moved forward or backward, to the right or left, as well as in a rotary motion. The machine follows all these motions for perfect spot grinding control.

As a further help, an oscillator mechanism will reciprocate the table rapidly under the grinding wheel. This motion can be actuated by pressing the top button of the left hand operating lever.

Loads, unloads automatically

To inspect the work the operator presses another button. This moves the table to an extreme left position where the billet can easily be scanned. When grinding is complete, pressure on another button charges a new billet into position and discharges the finished piece.

The average machine grinding cycle takes about five minutes per billet.

As an added feature the control system is arranged so the operator can quickly switch from semi-automatic lever control to a completely automatic grinding cycle. In the fully automatic setup, the operator simply sets a dial for the machine to make from 1 to 4 grinding passes per billet side. After closing the starting button, the machine will completely grind all four sides of the billet and come to rest in the discharge position.

For many detail parts—

Plaster Mold Process Gives Better Aluminum Magnesium Castings

By G. R. GARDNER, Assistant Chief
Cleveland Research Div., Aluminum Research Laboratories
Aluminum Co. of America, Cleveland

♦ Thin-walled, smooth surfaced aluminum and magnesium castings, with good physical properties, are being produced using the plaster mold process in Alcoa foundries . . . The process, as developed in these plants, offers advantages not previously attainable.

♦ Properties of plaster are used to advantage to obtain smoother surfaces, to retard cooling in order that thinner sections may be cast . . . A special technique has improved plaster permeability.

♦ PLASTER MOLD process casting, as developed by the Aluminum Co. of America and used in the company's five foundries, offers many possibilities for new and better aluminum and magnesium castings. The high-production process has made possible the manufacture of castings having thinner sections, closer dimensional tolerances, and better surface finish than previously available with sand and permanent mold methods. Mechanical properties are comparable to those of sand castings.

Effect of Composite Molds on Mechanical Properties of Aluminum Castings

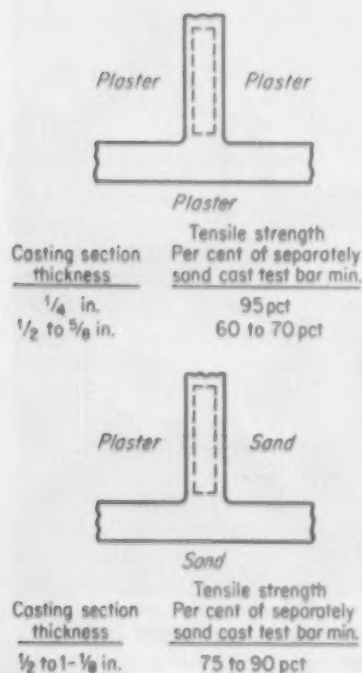
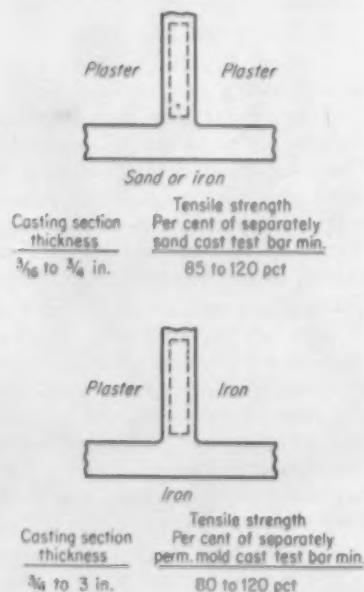


FIG. 1 — Typical tensile strength of test bars machined from dotted line areas of plaster and composite mold castings. Except for casting sections 1/2 in. and over, tensile strengths exceed 75 pct of separately cast test bar values. Mechanical property data represent a number of commonly used aluminum alloys and heat treatments which were also used in the tests.



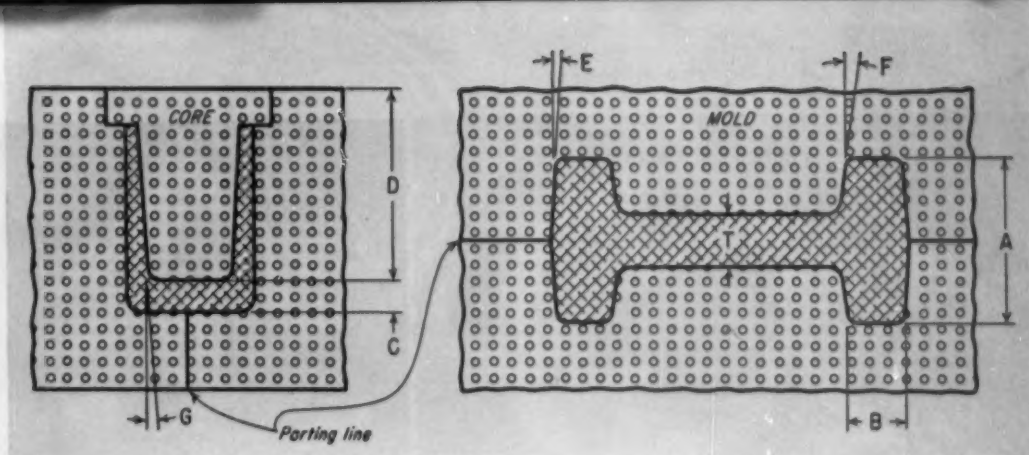


FIG. 2—Use these data in applying the plaster mold process to specific design problems.

(A) Across parting line: ± 0.010 in. for 1 inch or less; above 1 inch add 0.001 in. to tolerance per inch of length.

(B) Between points produced by one part of the mold: ± 0.005 in. for 1 inch or less; above 1 inch add 0.001 in. to tolerance per inch of length.

(C) Between points produced by a core and the mold: ± 0.010 in. for 1 inch or less; above 1 inch add 0.001 in. to tolerance per inch of length.

(D) Maximum length of core supported at one end: Diameter of core $\times 5$.

(E) (F) (G) Draft: 0° draft permissible in many cases; 2° is desirable.

Notes:

- (1) Minimum diameter of separate cores, $\frac{1}{4}$ in.
- (2) Minimum thickness "T" for distance of

(a) 3 in. or less, $\frac{1}{16}$ in.

(b) 3 in. to 6 in., $\frac{3}{32}$ in.

(c) Over 6 in., $\frac{1}{8}$ in.

(3) When plaster is used in a particular area of a casting to gain a dimensional advantage, this area of the casting should be used to set up from for machining.

(4) Minimum radius of fillet. Sharp corners can be cast when desired.

(5) Nominal surface finish: 125 microinches rms or better may be attained.

Plaster shows promise for the large scale production of small parts where fine detail, smooth surface, and freedom from flash are important. Many parts may be cast which could not be made by previous methods.

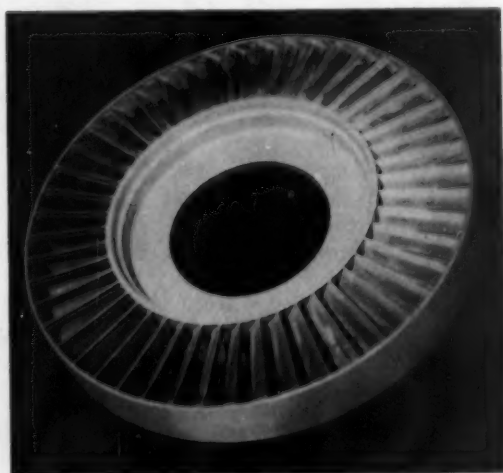


FIG. 3—Industrial torque converter part produced by Alcoa for American Machine & Foundry Co. Each pair of twin blades is separated by 0.040 in. Blades were cast using plaster cores.

Plaster process mold materials are used in two ways—as a component in a composite or combination mold and in an all-plaster mold. The use of composite molds in casting aluminum and magnesium alloys helps provide the optimum combination of properties and tolerances.

Where good dimensional tolerances, smooth surfaces, intricate details or thin sections are required, an all-plaster mold can be used to advantage. In making castings with thin sections, the insulating characteristics of the plaster prevent chilling the metal too rapidly, permitting the molds to be filled without misruns.

Plaster, prepared as a slurry and poured into a core box around a pattern, closely duplicates the surface finish and dimensional accuracy of the core box or pattern. After hardening, plaster components can be handled as integral self-supporting parts.

In early efforts to use plaster, advantages of the material were accompanied by many disadvantages. First, composite molds employing plaster were seldom used and the insulating properties of plaster caused excessively slow cooling rates. Second, since mold gases could not escape through the mold material, blows, misruns and porosity resulted in the casting. Also, for production runs, effective means of re-

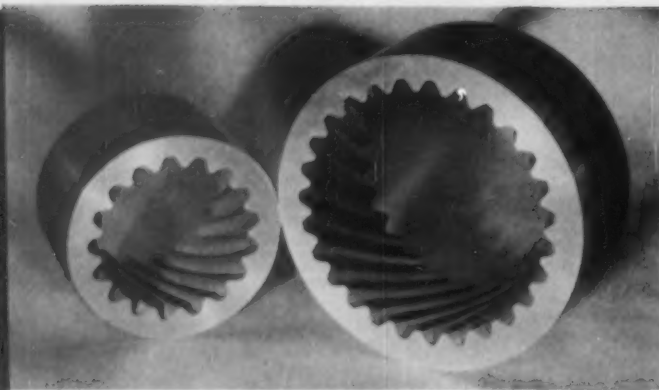


FIG. 5—Inside teeth of these helical gears were cast using Alcoa plaster components.

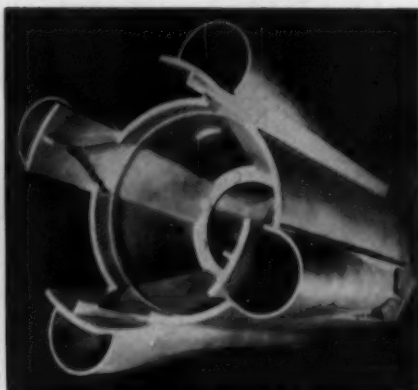


FIG. 4—Component for Navy rocket. Aluminum casting (part formerly a sheetmetal assembly) has thin walls, intricate contours and stands about 2 ft high. Plaster mold process was used.

producing the plaster molds quickly and on a production scale were not available. These problems have been solved by the Alcoa plaster casting process.

To overcome blows, misruns and porosity encountered with solid plaster molds, mold gases are allowed to escape through the plaster. This was accomplished by making the plaster molds permeable through the presence of millions of tiny, interconnected air bubbles.

The insulating characteristics of plaster are also used to advantage. Thinner cross-sections can be cast because the insulating value of the mold prevents chilling the metal too rapidly. The method is adapted to the production of intricate small castings.

Where thicker cross-section castings are required, Alcoa combines plaster with quicker-chilling mold materials (sand or iron) in a composite mold. These composite molds are ideal for getting an optimum combination of the physical properties in a particular casting. Correct combinations of these mold materials allow close control of metal cooling rates and resulting physical properties.

Mechanical properties of castings can be controlled to some degree by selection of the type of mold, either composite or all-plaster, depending upon the surface or dimensional requirements and on section thickness. The effect of mold materials on tensile strength of aluminum alloy castings where permeable plaster forms at least one component of the mold is illustrated in Fig. 1.

The percentages, Fig. 1, are not intended to be design values but are shown to illustrate the general range of tensile strength values which can be expected in a wide range of castings made in all-plaster and composite molds (both heat treated and unheat treated).

If strength is an important consideration, it is important that both designer and foundry have a clear understanding of the areas of the casting in which highest strengths are required. By proper casting design and selection of proper foundry methods it is usually possible to make a casting having both the dimensional characteristics imparted by the plaster process and mechanical properties equal to or better than those which can be produced by the sand casting process alone.

Yield strength, the basis of many casting designs, is less affected by mold material or rate of solidification than tensile strength or elongation.

Easily removed from pattern

The tolerances suggested for use with the Alcoa plaster process can be easily demonstrated with the simple casting cross-section in Fig. 2. Since a plaster mold material can be removed with relative ease from the pattern equipment used, the draft angles, "E", "F", and "G" in Fig. 2, can be zero in many cases. Two degrees draft angle is desirable, however, and may help to lower part cost.

The bladed casting in Fig. 3, a torque converter part, has double blades. Each pair is separated by an average 0.040 in. The use of plaster cores made casting of these blades possible.

The casting, Fig. 4, which forms part of a U. S. Navy rocket, was cast in an all plaster mold. A part like this formerly was fabricated from a number of stampings and assembled into the finished part at a considerably higher cost. The thin walls, intricate contours were suited to plaster mold casting.

Inside teeth of the helical gears, Fig. 5, were cast with plaster, required no machining.

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New Technical Literature:

Recorders

Stress-strain recorders and strain followers for testing machines are covered in a new 28-page illustrated bulletin. It offers development service for handling special problems and describes 16 standard recorders and 50 models of strain followers. These include the types based on resistance wire strain gage principles, many types based on miniature variable transformer principles, those based on electric contacts and selsyn motor-generator system, as well as the low magnification types. *Baldwin-Lima-Hamilton Corp.*

For free copy circle No. 1 on postcard, p. 97.

Tools and blanks

A new catalog covering latest prices and specifications on standard tools and blanks in its 300 series steel cutting carbides, grade 350 and 370, is announced by Carboloy. It also lists several new tools and blanks added to the line recently. *Carboloy Dept., General Electric Co.*

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Trucks

The Elwell-Parker Electric Co. new line of hydraulic die handling trucks is covered in this literature. Stressed is the unique design of the trucks. Typical die setting time with a 14,000 lb die is only eight minutes, while removal can be accomplished in less than five minutes, according to the literature. *Elwell-Parker Electric Co.*

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Abrasive chips

Honite abrasive chips and Honite compounds for barrel finishing are the subject of this new folder. Composition and performance characteristics are given, along with specifications. *Minnesota Mining & Mfg. Co.*

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FOR YOUR COPY

Money-saving products and services are described in the literature briefed here. For your copy just circle the number on the free postcard, page 97.

Screws

Screw machine products are covered in this new catalog. Among products discussed are set screws, cap screws, milled studs, brass screws, collar screws, milled coupling bolts and heavy bolts. Specifications are included. *Wm. H. Ottemiller Co.*

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Lift trucks

The profitable handling of pre-cast concrete for bridges with the use of the RT-150 and YT-40 Hyster lift trucks is the subject of this bulletin. The report is a case history of modern handling and construction methods in conjunction with these Hyster models. *Hyster Co.*

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Handy calculator

A slide-rule type Quantity-Weight Calculator for screw machine parts will aid screw machine stock buyers and operators to make quick stock requirement estimates on aluminum parts. The at-a-glance device instantly gives the amount of aluminum stock needed for 1000 screw machine parts with combination dimensions ranging from 1/4 in. to 3 in. in length and 1/8 to 3 1/2 in. in diameter. *Kaiser Aluminum & Chemical Corp.*

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Catalogs & Bulletins

Clutches

Model MOS (single) and MOD (duplex) Oil-Actuated Multiple Plate Clutches are the first standardized clutches of this type available for general industrial use. Both models are readily adaptable to remote or push-button control with specialized actuating linkage. Adjustments are eliminated throughout the life of the clutches and constant torque transmitting ability is assured. *Twin Disc Clutch Co.*

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Battery selection

Battery selection techniques are emphasized in this manual. The manual deals with storage batteries for stand-by power, emergency lighting and switchgear applications. A discussion of charging equipment and simplified battery maintenance techniques is also included. *Electric Storage Battery Co.*

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Counting scale

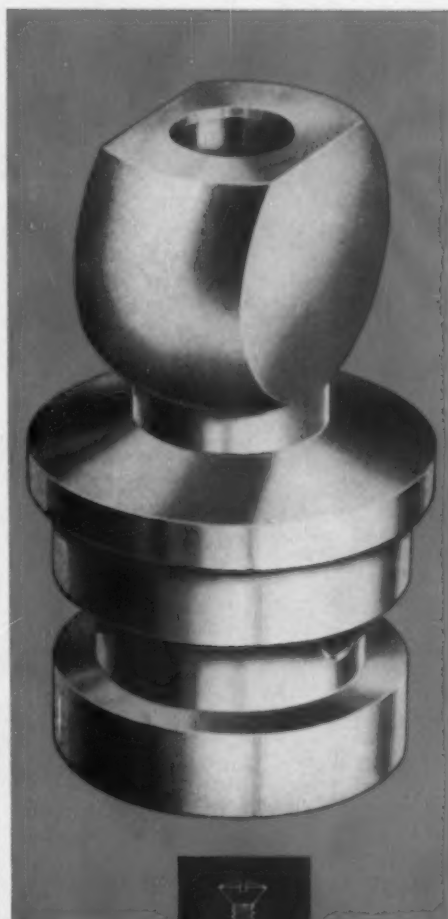
Counting-by-weight is described and illustrated in this new brochure. Toledo fan, bench, portable, floor, and built-in scales are discussed. Advantages include quick counting of unknown quantities and ability to issue predetermined quantities of parts. *Toledo Scale Co.*

For free copy circle No. 10 on postcard, p. 97.

Wet-blasting

Cleaning prior to electro-plating with pressure blast is discussed in this new technical bulletin. Applications are described in detail. Manually operated and automatic equipment designed for various installations are described. *The Cro-Plate Co., Inc.*

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Turn Page



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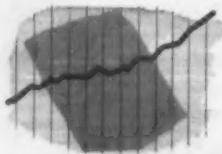
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FREE TECHNICAL LITERATURE

Ventilation

Ventilation problems are covered in this new brochure. Eight metal-working applications where warm air space heaters were used to temper large volumes of fresh make-up air for plant ventilation are described. How oil or gas fired space heaters facilitated the venting of toxic and noxious fumes, odors and dust is described. *Dravo Corp.*

For free copy circle No. 12 on postcard, p. 97.

Sprayweld

The new Model C Spraywelder and the Sprayweld process are covered in this bulletin. The Spraywelder is a metal powder spraying unit used in welded overlay type hard-facing applications. The bulletin describes the Spraywelder and the Colmonoy alloys available for use with the new Model C, which has greater spraying capacity and deposit efficiency. Applications are listed. *Wall Colmonoy Corp.*

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"Luncor"

"Luncor," all molded PVC valve and fittings, is the subject of this circular. The "Luncor" valve and fittings have remarkable resistance to corrosive chemical action and resist most chemicals used in industry, according to the circular. Stressed are the strength, corrosion-resistance and economy of this product. *Lunkenheimer Co.*

For free copy circle No. 14 on postcard, p. 97.

Stainless steels

Carpenter Stainless No. 20 and No. 20-Cb are described in this new catalog. Both the basic No. 20 alloy and the columbium-stabilized analysis are sulphuric acid resistant steels. Information on the steel's corrosion resistance, applications and working characteristics is included. Field reports describe performance of the steel under varying corrosive conditions. Physical and mechanical properties are given as well as full listings of forms and shapes available. *Alloy Tube Div., Carpenter Steel Co.*

For free copy circle No. 15 on postcard, p. 97.

Turn Page

A SPECIAL REPORT ON PROTECTIVE FINISHES FOR ALUMINUM

Most aluminum producers and fabricators are well aware of the superiority of chemical finishes over anodizing for the protection of aluminum from corrosion. Naturally, then, there is a running battle for acceptance among the leading producers of the protective chemical finishes.

That's why, here at Allied, we have always studied your needs with regard to both our own and competitive processes. We're constantly trying to produce new and better finishes because we believe there's always room for improvement . . . even to our own products. Some years ago this policy led to the introduction of a process, long in development, that offered you a way to overcome anodizing's obvious technical complications . . . Iridite #14. This finish was far easier to use than anodizing, yet provided comparable, if not superior, quality. And, its cost was much less than anodizing.

But other finishes offering similar advantages over anodizing have entered the market. So . . . the current battle for acceptance. By any cost comparison Iridite #14 is the most economical. However, corrosion tests by users show contradictory results as to performance from Iridite #14 and other leading protective finishes for aluminum. Most tests show Iridite #14 superior, but some do not. The margin of difference, however, is always small. The truth is that all have proved good. However, our laboratory research indicated that still further improvements could be made.

That knowledge . . . plus our aim to give you even better protection and maintain the leadership of the industry, is exactly why Allied Development Engineers have been working for long years to develop a better finish than any of those now available, including our own Iridite #14.

Now the new finish is ready for you. It's called Iridite #14-2 (Al-Coat).

From a performance standpoint, Iridite #14-2 gives you two important advantages in the protective finishing of aluminum.

FIRST: in its fully colored brown film stage it provides corrosion resistance decidedly superior to previous processes.

SECOND: the basic brown film can be hot water bleached to produce a clear-type film with protection heretofore unobtainable from clear-type chemical finishes.

From an operating standpoint, new Iridite #14-2 gives you three important advantages.

FIRST: it provides consistently


higher corrosion resistance for different aluminum alloys treated in the same bath.

SECOND: it provides a more uniform appearance for parts of different alloys and with varied surface finishes before treatment.

THIRD: its operating and technical characteristics are superior to those of other processes.

If you are using or planning to use a chemical finish for aluminum, you should have full details on new Iridite #14-2. Write us or send samples for free test processing. Or, for more immediate advice, call your Iridite Field Engineer. He's listed under "Plating Supplies" in your classified telephone book. . . . **ALLIED RESEARCH PRODUCTS, INC., 4004-06 EAST MONUMENT STREET, BALTIMORE 5, MARYLAND.**

P. S. Even new Iridite #14-2 will be constantly measured against both your needs and competitive processes to make sure you get the best possible, most economical finish for your product that man and the laboratory can develop.



A PINCH OF LEAD FOR FAST, CLEAN CUTTING

Lead added to Aristoloy Steels acts as a lubricant and reduces friction between tool face and chip. It also produces a better chip formation, allowing higher machining speeds to be employed. Many users report improved machinability ratings, up to 100 for leaded steels as compared to 60 or 70 for the same material unleaded.

Better finish and longer tool life are additional benefits. Heat treating and mechanical characteristics remain unchanged.

Call your local representative or write today regarding application of leaded Aristoloy to your product.



ARISTOLOY
STEELS

COPPERWELD STEEL COMPANY
(STEEL DIVISION) WARREN, OHIO



BALL STUD

Use of 8640 Leaded improved automatic screw machine production nearly 40% for a large job shop. Production per machine hour increased from 108 to 150 pieces.



SPUR GEAR

A machine tool manufacturer cut machining time $\frac{1}{4}$ by switching to Aristoloy 4140 Leaded. And finish was greatly improved—from FAIR to EXCELLENT.



SPIRAL GEAR

Machinability was increased 25% when Aristoloy 4140 Leaded was substituted for non-leaded AISI equivalent. Biggest saving from a cost standpoint was a 75% improvement in tool life.

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FREE TECHNICAL LITERATURE

These publications describe money-saving equipment and services . . . they are free with no obligation . . . just circle the number and mail the postcard.

This section starts on page 92

Steel-Weld

Steel-Weld fabrication by Mahon is featured in this new folder. Among advantages listed are modern methods and modern facilities. Welding facilities are shown. Services include flame cutting, shearing, bending, forming, X-raying, spray painting and grit blasting. *R. C. Mahon Co.*

For free copy circle No. 16 on postcard.

Piping

Stainless steel piping is covered in this new bulletin. The methods of bending and joining stainless pipe are outlined. The problem of light wall versus heavy wall pipe is discussed. Also included are a table of dimensions and weights of various stainless pipe size schedules and condensed technical data on mechanical and physical properties of the more popular stainless steels used for piping. *Tubular Products Div., Babcock & Wilcox Co.*

For free copy circle No. 17 on postcard.

Industrial screens

Cal-Wic industrial screens are covered in this new book. Among topics discussed are ordering wire cloth, standard lengths and widths, prices, choosing the right screen, definition of mesh, definition of space, determining wire size, wire gauge differences in decimals, screen efficiencies, steel specifications and vibrating screens. Tables and illustrations give further information. *Colorado Fuel & Iron Corp.*

For free copy circle No. 18 on postcard.

Metal cleaning

This new comprehensive illustrated booklet provides easy reference on all the important phases of metal cleaning. With an introduction on the fundamentals of metal cleaning, the booklet discusses types of cleaners, washing cycle, cleaning prior to plating, cleaning prior to painting, pickling prior to enameling, pickling between drawing operations, and the application of metal parts processing machinery to the metalworking industry. *Metalwash Machinery Corp.*

For free copy circle No. 19 on postcard.

Pension plans

Two booklets by the Travelers Insurance Co. cover pension plan funding and the Internal Revenue Code. Considerations discussed are permanence, realistic evaluations of potential costs, funding such costs in a systematic manner, and guarantees. A "qualified" plan is defined and discussed. *Travelers Insurance Co.*

For free copy circle No. 20 on postcard.

Switch

The Barksdale-Meletron pressure difference switch is discussed in this leaflet. The pressure response characteristics are discussed. Advantages include accuracy, not sensitive to vibration, operates in any position, tamper proof adjustment and splash proof housing. Operating characteristics and ordering data are given. *Barksdale Valves.*

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FREE TECHNICAL LITERATURE

Monel

The engineering properties of cast Monel are described in this new technical booklet. Cast Monel combines high strength with good ductility and corrosion resistance, according to the bulletin. The material has a tensile strength comparable to carbon steel and gives good performance under conditions of abrasion and erosion. *Development and Research Div., International Nickel Co., Inc.*

For free copy circle No. 22 on postcard.

Buying guide

Molded and extruded rubber and extruded plastics are covered in this buying guide. The book contains basic information, including specifications, terms, definitions, performance characteristics, tolerances, and tables of the properties available in the many types of common rubber and plastics compounds. *General Tire & Rubber Co., Industrial Products Div.*

For free copy circle No. 23 on postcard.

Presses

High speed blanking presses are covered in this new booklet. The bulletin covers two sizes of blankers, No. 0 and No. 1, which are used for mass production of parts requiring blanking, piercing, shallow drawings and forming. Features include the two post gate guides, connection design and feed arrangement. *Waterbury Farrel Foundry & Machinery Co.*

For free copy circle No. 24 on postcard.

Rental plan

The Ther-Monic induction heating rental plan is the subject of this new bulletin. Ther-Monic induction heating equipment is discussed. Metal-treating processes covered include brazing, soldering, hardening, melting and thru-heating for forging. The range of equipment available is discussed. Rental rates and leases are included. *Induction Heating Corp.*

For free copy circle No. 25 on postcard.

FOR MORE LITERATURE

Many companies offer free literature and other information in their advertisements. For the names of these firms see the company listings in the index of advertisers.

Titanium

Two bulletins cover 3A1 5% cr titanium alloy and MST Grade III titanium. Strength, stability and other physical properties are discussed. Tables and charts give additional information. *Mallory-Sharon Titanium Corp.*

For free copy circle No. 26 on postcard.

Materials handling

NesTier small parts handling equipment is the subject of this new case study. Before-and-after study shows an actual installation of NesTier equipment. Stressed is the increase in production gained by the equipment. Statistical breakdowns of times for each element of the operation are given. *Chas. Wm. Doepke Mfg. Co., Inc.*

For free copy circle No. 27 on postcard.

Grinding wheels

Cincinnati Grinding wheels are the topic of this new booklet. Among advantages discussed are economy, freer cutting, positive duplication and self-dressing action. The wheels are shown and their applications discussed. *Cincinnati Milling Products Div., Cincinnati Milling Machine Co.*

For free copy circle No. 28 on postcard.

End mills

The complete line of Shear-Carb helical carbide tipped end and shell mills is described in this new folder. Included are prices, specifications, design, and applications for these mills. *Wendt-Sonis Co.*

For free copy circle No. 29 on postcard.

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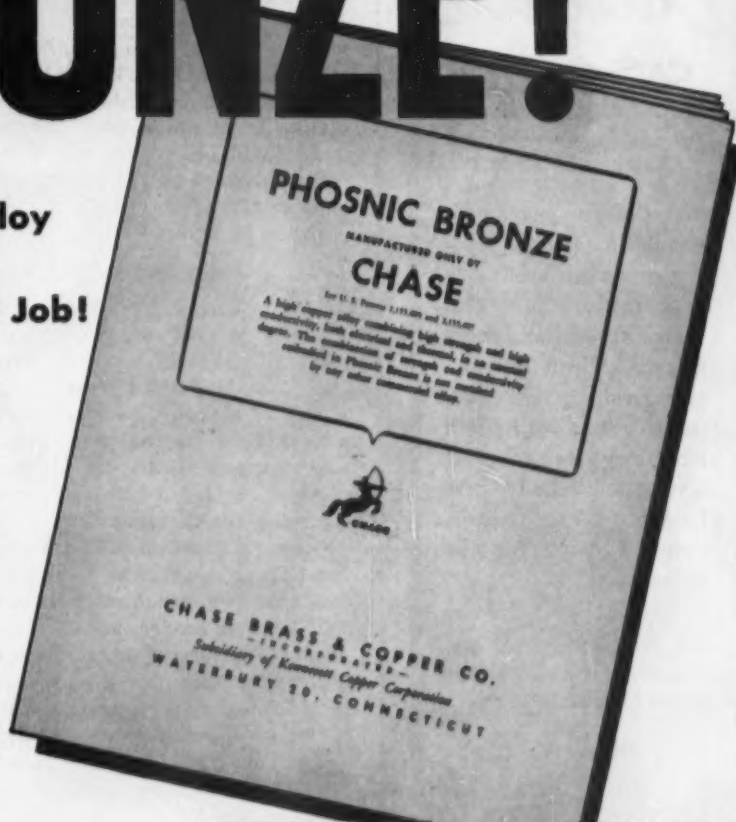
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99

HEAT TREAT: On Continuous Line

Plate to 172 in. wide and 3 in. thick will be handled on a continuous basis in a new heat treating setup planned by Lukens Steel . . . Operation scheduled for spring of '55.

A continuous plate heat treating line for hardening, tempering, and normalizing large plates has been ordered by the Lukens Steel Co., and is scheduled to be in operation in the spring of 1955. The line is being built and installed by the Drever Co., Philadelphia, and will handle plate up to 172 in. wide, 3 in. thick and 480 in. long. A new building is being erected to house the line. The water supply for the quench and other uses will come from a diverted nearby stream and a reservoir of 5,000,000 gal capacity to be built.

Controlled By One Man

The facilities consist of a 52 ft charging transfer car, 145 ft hardening roller-hearth furnace, 10 ft long transfer table, 45 ft long 2500 ton pressure quench, 52 ft long transfer car, 200 ft long by-pass conveyor table, 52 ft long transfer car and a 200 ft tempering roller-hearth furnace.

Other facilities include a wider 200 ft long conveyor table and 52 ft long transfer car to serve Lukens 200 in. roller leveler and an additional by-pass conveyor for the 200 ft furnace. All conveyor rolls, furnace doors and transfer cars will be motor operated and controlled by one man from a control house located adjacent to the quench press.

Has Quick Rollover

The temperature range will be from 750°F to 1650°F and heat treating cycles will vary to accommodate the wide variety of plates for which the line is intended. Rated capacity is 9 tons per hour of net size plate and maximum capacity is 19.2 tons per hour net plate.

Special provision is being made for quick roll removal and replace-

WANT MORE DATA?

You may secure additional information on any item briefed in this section by using the reply card on page 97. Just indicate the page on which it appears. Be sure to note exactly the information wanted.

ment in design of the furnace casing and roll drive.

For Reversible Heating

The 200 ft furnace is designed for reversible heating so that, when normalizing plate, the furnace may be charged from either end. When processing armor plate, it will be used only in one direction of the quench press end.

The furnaces will be direct fired with combination natural gas or oil tempered flame burners. Control panels will be located in a room adjacent to the operator's room. Over-temperature protection will also be provided to prevent furnace rolls from exceeding the top furnace temperature. The maximum connected fuel capacity for both furnaces will be 121,000 cfh of natural gas or 860 gph of light fuel oil.

Spray Pipes Built In

Quench water will be directed on the work by renewable spray pipes built into the upper and lower platens. Water control will be in six sections by means of air operated diaphragm control valves and push button operated from the control room. Maximum water consumption will be 24,000 gpm at 45 to 60 psi and furnished by three 400-hp, 8000 gpm pumps.

An electrical control center located below the operator's control



NEW

*Allenpoint
Set Screws*

WITH
SCIENTIFICALLY-DESIGNED
SMALLER CUP POINTS

Smooth, deep point penetration for greater hold-in power and resistance to vibration; precision formed threads and accurate thread lead for maximum locking action. Comparative tests by leading laboratory prove Allen Set Screws unmatched in performance. Write to Advertising Department for Bulletin C-33A.

When ordering through your local industrial distributor, specify Genuine Allenpoint Set Screws.



ALLEN

MANUFACTURING COMPANY
Hartford 2, Connecticut, U.S.A.



TECHNICAL BRIEFS

room will contain all motor starters, the main circuit breaker and transformers for reducing line voltage for control power.

Besides interphone communication, two television receivers in the control room are planned.

Machining:

**New bed type machines
speed heavy duty work.**

In line with the demand for fast, powerful, more accurate milling machines, The Cincinnati Milling Machine Co. has developed a completely new line of heavy duty bed type equipment. The new machines are designed for continuous operation on medium to larger size parts.

For increased cutting capacity, the HyPowermatics offer drives up to 50 hp. Spindle speeds to 2000 rpm are available for conventional or climb milling with high speed steel or carbide cutters. The machines have automatic two-way table feed cycles and infinitely variable feed rates.

Standard machines are built in plain and duplex styles in 42 sizes of each. Sizes range from a 36 in. table travel, 7½ hp model to a 50 hp machine with 168 in. table travel.

Uses Automatic Table Cycles

The new millers have intermittent, dog controlled automatic table cycles. Feed rates are infinitely variable throughout their complete range of ¼ in. to 100 in. or 150 ipm depending upon machine size. The table is driven by a new type of hydraulic motor unit, enclosed within the bed for protection from dust and grit.



Fast, powerful, accurate . .

steel fabrication specialists

No matter where you are located, you'll find it pays to call on Levinson in Pittsburgh for special fabrication work that requires top engineering assistance or extreme accuracy and unusually good delivery. Send us an inquiry.



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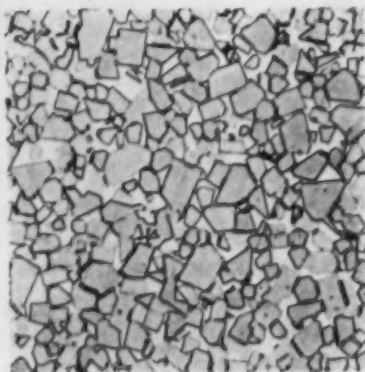
Color metallography checks product quality

Color photography is being used by one producer of tungsten carbide material as a quality control check on production and to assist the research dept. Recently the 20,000th such sample was examined in the laboratory of Firth Sterling Inc., Pittsburgh.

The carbide specimens come to the laboratory after having been checked first for mechanical properties in Firth Sterling's quality control department of the Carbide Div., located in McKeesport, Pa. In the laboratory at Pittsburgh, the samples are mounted in Bakelite, ground and polished to a high, mirror-like finish for examination under the microscope.

Porosity Checked

Metallographic examination for porosity is checked at a magnification of 200 diameters. The speci-



Carbide structure . . .

mens are then etched in various reagents and examined at 1500 diameters for structural constituents, segregation, size of carbide particles, and possible impurities in the material.

To facilitate quality control, the laboratory is equipped to do highly specialized types of color, as well as black-and-white and color metallography to aid in detecting constituents in carbide mixtures.

**WHEN IT'S
Special BOLTS
and STUDS**

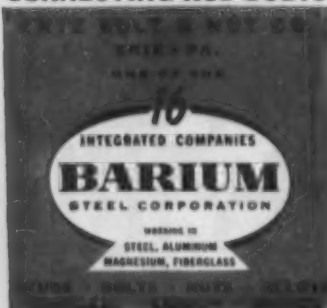
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**40 years' experience in
making special bolts, studs,
nuts for specific job
requirements.**



Specialists in Precision High Quality
CONNECTING ROD BOLTS



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RIVET SETS • COMPRESSION RIVETER DIES

Made of highest standards and uniform quality thus insuring maximum service.

Since 1903

Large inventory of stock sizes of round punches and dies, also rivet sets available for immediate shipment. Square, rectangular, oblong and elliptical shapes made to order.



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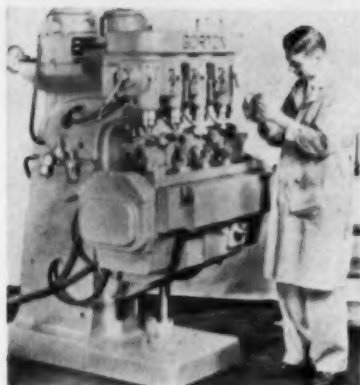
GEO. F. MARCHANT COMPANY

1420-34 So. ROCKWELL STREET

CHICAGO 8, ILLINOIS

NEW EQUIPMENT

New and improved production ideas, equipment, services and methods described here offer production economies... for more data use the free postcard on page 97 or 98



Four-spindle rotary duplicator for profiling

A high production 4-spindle duplicator will profile two locking lug recesses in two gear blanks automatically while operator unloads and reloads two other fixtures for the same operation on two other blanks. Design causes heads and rotating fixtures to operate in pairs, each pair of fixtures being governed by a separate master. Two masters, one for each pair of fixtures, are located within the table assembly. One pair of iden-

tical parts can be processed by one pair of cutters and fixtures, while the other pair perform a different operation on two other pieces. In the application illustrated locking lug recesses are milled in bevel gear blanks at a rate of 100,000 pieces per month. Recesses measure 5/32 in. deep x 13/64 in. wide. Material is SAE 4615 cold drawn, 180 to 210 Brinell materials. *George Gorton Machine Co.*

For more data circle No. 30 on postcard, p. 97.

Unitool method cuts variety of gears with single cutter

For cutting a wide variety of spiral bevel, Zerol bevel, and hypoid gears the new Unitool Method uses a single cutter. Since the method is best adapted to cutting gears in small-lot quantities, it is particularly useful to the small gear shop for its normal requirements, and to the production plant where experimental gears are needed for pilot models. The Unitool Method is designed for use with Gleason Nos. 106 and 116 Hypoid Genera-

tors. With this new technique the same cutter is used for both members of the pair, and each part is completed before removing from the machine. Unitool cutters are the segmental type, and require no shimming or adjusting. Each cutter covers a wide range of work sizes and the combined range of the two machines mentioned is covered by only six cutters, which overlap in range. *Gleason Works.*

For more data circle No. 31 on postcard, p. 97.



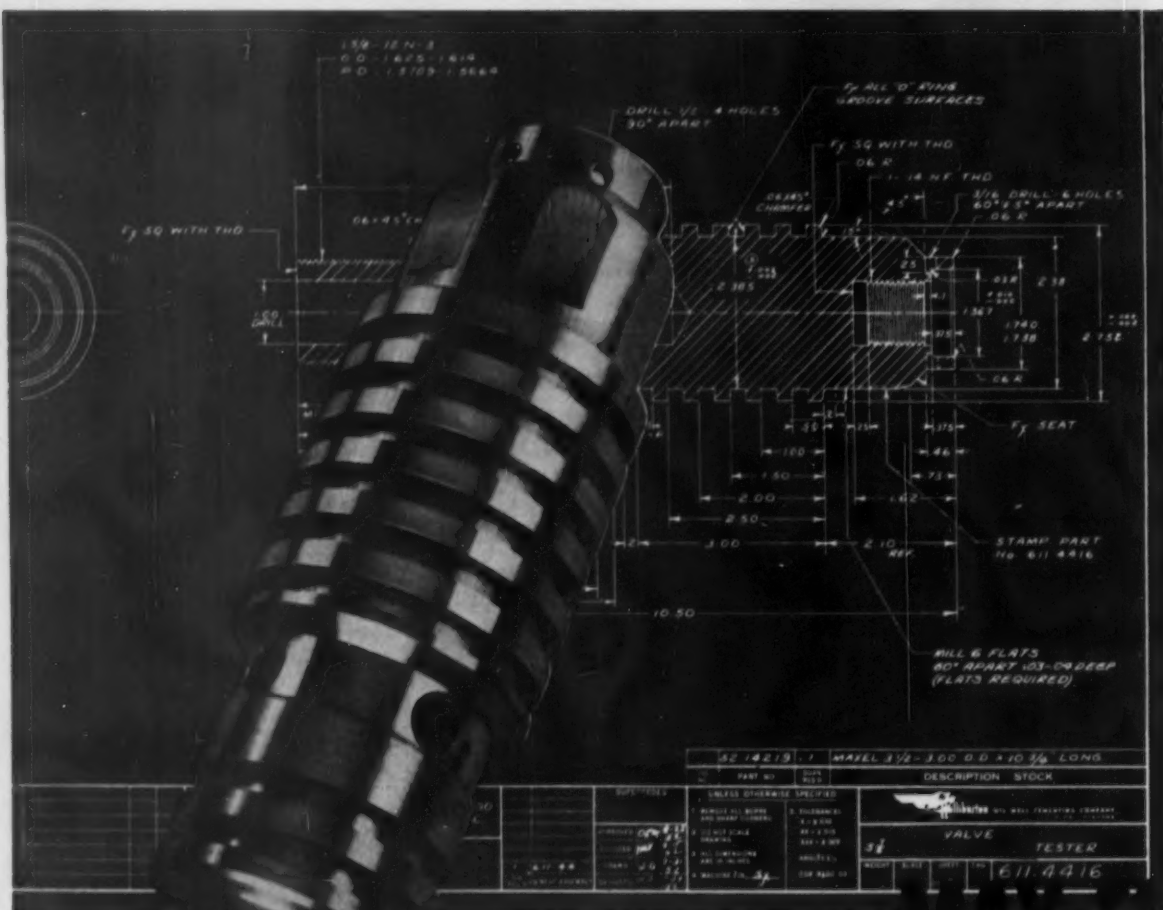
Circular saw cuts 43-in. diam aluminum billets

The heavy press program of producing large aircraft components requires accurate, fast production of cutoff aluminum stock. To meet this need, the Model No. 5 high speed circular sawing machine has been built with capacity for cutting 43 in. diam aluminum billets. The machine features a steel gear case housing a heavy-duty, helical gear train mounted on pre-loaded roller bearings. Saw head ways have non-metallic wear strips and forced

feed lubrication. Variable saw feed is by hydraulic cylinder. Drive of the gear case is through multiple V belts and pulleys by 150 hp dc motor, giving variable speeds within an 8:1 ratio. Ample clamping of large stock is provided by heavy upper clamp and gooseneck, holding stock against V blocks in the lower vise. *Motch & Merryweather Machinery Co.*

For more data circle No. 32 on postcard, p. 97.

Turn Page



intricately machined **MAX-EL**
alloy steel part shows minimum
distortion after heat treatment...

Halliburton Oil Well Cementing Company, Duncan, Oklahoma, selected hot rolled MAX-EL $3\frac{1}{2}$ bar stock for the valve shown. It's an important part of their $5\frac{7}{8}$ " tester, used to sample fluids or gases during drilling operations, sometimes 15,000 to 20,000 feet below the surface.

The valve is machined in the annealed condition and then heat-treated. Even though it varies considerably in thickness, no distortion problems are encountered in this MAX-EL part.

Try MAX-EL in your shop. You'll like its better machinability, freedom from distortion and over-all quality. And you'll get longer tool life . . . more pieces per grind. Call Crucible for immediate warehouse delivery of MAX-EL steels.

CRUCIBLE

first name in special purpose steels

54 years of *Fine* steelmaking

ALLOY STEELS

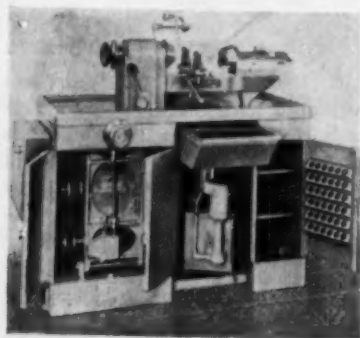
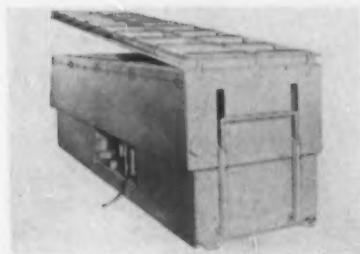
CRUCIBLE STEEL COMPANY OF AMERICA, GENERAL SALES OFFICES, OLIVER BUILDING, PITTSBURGH, PA.

Conveyorized lifting table handles long sheets

A conveyorized elevating table handles long sheets of material being fed into a shearing operation, a blanking press, press brake or other machines where the size of the sheet presents a problem. The roller conveyor type top, 40 x 144 in., is hinged at one end to permit

raising the opposite end a maximum of 18 in. Ratchet-type stops permit raising this end of the table top in increments of 3 in., from 0 to 18 in. Entire machine is sheet metal enclosed. Load capacity is 12,000 lb. *Union Tool Corp.*

For more data circle No. 33 on postcard, p. 97.



New drive eliminates overheated motor problem

On the new Wade No. 73 hand screw machine a new drive permits reversing spindle shaft without reversing motor, eliminating the problem of an overheated motor, because the motor always runs in one direction. The gear box drive has a new clutch arrangement providing mechanical reversing. Helical gears in constant mesh, together with a clutch yoke and vari-

able pitch drive pulley, comprise the basic features of the new gear box drive. A positive drive timing belt replaces the V belts previously used. Variable pitch pulley on the motor shaft provides stepless speed control through a worm and worm gear operated by a handwheel. There is a 100 to 3500 rpm range. *Wade Tool Co.*

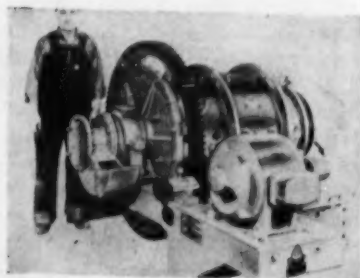
For more data circle No. 34 on postcard, p. 97.

Improved tractor-shovel has torque converter

An improved Payloader tractor-shovel with bucket capacity of 1 cu yd Payload and $\frac{3}{4}$ cu yd struck load is a rear-wheel drive model. It features a combination of a new Hough-built transmission plus torque-converter drive. The torque-converter is a self-cooled, 3-element type which automatically multiplies torque output of the engine in di-

rect proportion to the load requirements. Payloader life is increased because torque converter acts as a cushion or shock absorber for the entire power train to give smooth starts and reduce load shocks. Transmission is full-reversing type, giving four speeds forward and four reverse. *Frank G. Hough Co.*

For more data circle No. 35 on postcard, p. 97.



Pilot plant grinding simplified with new ball mill

New steel head ball mill mounted on a steel base is designed for flexibility. The shell sections can be added or removed as required to more accurately duplicate mill problems. The motor and drive are part of the packaged unit. The mill illustrated has a large diam-

eter discharge, which may be made smaller very easily in the plant if pilot plant tests require it. Feed is by scoop but feed plate may be removed for direct feed by launder, chute or pipe if desired. *Denver Equipment Co.*

For more data circle No. 36 on postcard, p. 97.

Fast steam cleaning for tough and ordinary work

Faster steam cleaning on both tough and ordinary cleaning work is claimed for an improved Model 250 high pressure combination cleaner. This model produces pressures up to 300 psi, using a pump for pressure instead of steam. Five distinct cleaning actions and capacities are possible: high pressure steam, maintained at 325°F, with 240 gph and 300 psi without

excessive fog; high pressure cold water to 350 gph at 300 psi; low pressure wet steam at 15 boiler hp; low pressure warm water to 360 gph, temperature thermostatically controlled. Two valves on the control panel permit the operator to shift instantly to any of the five cleaning actions. *Malsbary Mfg. Co.*

For more data circle No. 37 on postcard, p. 97.

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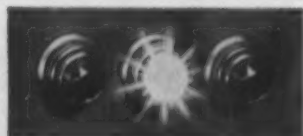


Air-mechanical gage checks squareness, concentricity

Critical concentricity and squareness checks are performed on various sizes of refrigerator compressor cylinder housings with an air-mechanical gage. A dial indicator gaging unit checks the concentricity of the large counterbore with the mutual axis of the main bearings. The air unit, a 5000 to 1

magnification Dimensionair, checks the squareness of the cylinder bores with the axis of these bearings. For both inspections, the bearing axis serves as the reference. It is possible to check to very close tolerances on a gage of this type. **Federal Products Corp.**

For more data circle No. 38 on postcard, p. 97.



color-glance

Brinell Hardness Tester

- Automatically signals relative hardness.
- Speeds up testing cycle with greater economy, yet assured accuracy.

3 colored lights immediately tell you:

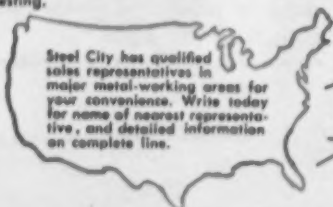
TOO HARD — yellow
WITHIN RANGE — green
TOO SOFT — red

The right color flashes automatically during each test

Here is the machine that decides for you which pieces are of proper hardness. Ranges are adjustable, easily set up by using pieces of known hardness or test bars. Color-Glance Brinell Hardness Tester is another Steel City first. For more than 40 years Steel City has designed and built better machines, with your particular application in mind.

Ideal for automation.

The electrical circuits which operate the color signals can be used to physically sort parts after testing.



Steel City has qualified sales representatives in major metal-working areas for your convenience. Write today for name of nearest representative, and detailed information on complete line.

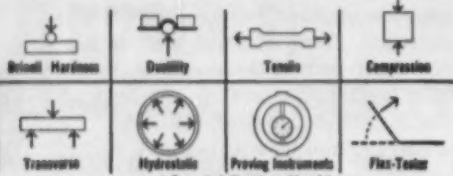


Patent Pending

Manufacturers of machines for testing physical properties of metals, including:

Steel City
Testing Machines Inc.

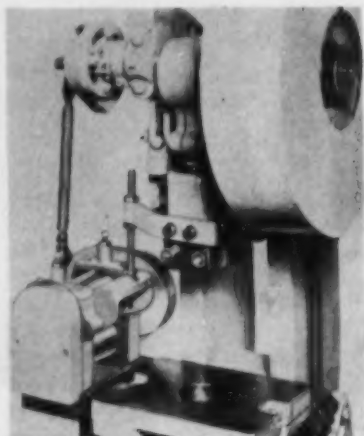
8815 Lyndon Ave. Detroit 38, Mich.



... and Special Testing Machines.

Roll lifters

All Benchmaster roll feeds are equipped with roll lifters as standard equipment. With this unit the rolls are separated slightly after each feed stroke is completed, thus



releasing tension on stock between press and coil supply. Automatic friction roll feeds are available in 3, 5, 7 and 9-in. roll widths, in 0 to 3 in. cutoff and 0 to 6 in. cutoff stroke lengths. Rolls are plain, knurled or rubber covered. **Benchmaster Mfg. Co.**

For more data circle No. 39 on postcard, p. 97.

Reclaims grinding segments

A simple low cost method of reclaiming grinding segments uses Gaff Bond 334. Segments are used to approximately half height size. Segment stubs are washed thoroughly with hot water and blown dry with air hose. A thin layer of 334 is spread on stub surfaces which are then tightly clamped together and stored 48 hr for drying or quick dried in furnace at 210°F. **Chemical Development Corp.**

For more data circle No. 40 on postcard, p. 97.

Roll-burring head deburrs ID and OD corners

Deburring both ID and OD corners of ends of ferrous and nonferrous metal tubing is possible by a new roll-forming process. The deburring head used can be mounted on spindles of a wide variety of standard and special single and double end tube burring machines. The Rol-Bur head is $3\frac{3}{4}$ in. diam x $1\frac{1}{8}$ in. long (less adapter) and includes three rollers and a mandrel.

Each roller has a tapered form which provides the reducing action that rolls down both inside and outside diameter burrs as the head is fed into depth over the tubing. Rollers are adjustable to permit deburring tubing from $\frac{1}{4}$ to $1\frac{1}{4}$ in. OD. Mandrels are quickly interchanged to suit the ID of the tube to be burred. *Tubco Co.*

For more data circle No. 41 on postcard, p. 97.



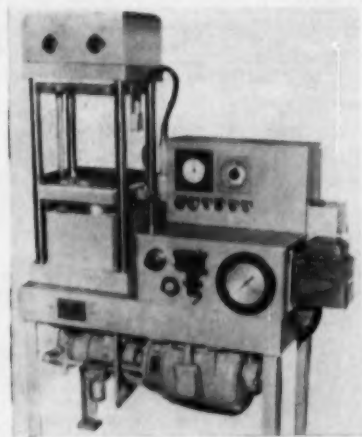
Glazing compound

Non-drying, permanently elastic glazing compound absorbs vibrations, shock, and expansion and contraction of steel and wood sash, reducing glass breakage. Cushion Glaze was developed to reduce glazing costs. *Lincoln Oil & Paint Co.*

For more data circle No. 42 on postcard, p. 97.

Plastics testing

New hydraulic plastics testing machine is designed to test the flow characteristics of thermosetting plastics material by using ASTM standard cup mold method. The machine is a complete self-contained unit including heating plates, motor



driven pump, motor, starter and control panel. Operating pressure is provided by an Oilgear pump directly connected to a 3 hp flange mounted motor. Press tonnage is 15 tons, stroke 6 in., operating pressure 2500 psi, platen size 12x12 in. and daylight opening 12 in. *Watson-Stillman Co.*

For more data circle No. 43 on postcard, p. 97.

Turn Page

POPE

the leading builder of precision spindles

REPAIRS SPINDLES TOO

BELT DRIVEN — MOTORIZED — HIGH CYCLE

ANY SIZE — ANY MAKE

OF ANTI-FRICTION BEARING SPINDLE THAT IS REPAIRABLE

For precision grinding, milling or boring, Spindles must be in first class running condition to produce good work and more of it.

The place to have your Spindles built to their original performance is where Precision Spindles are built.

You can send your Spindles to us with CONFIDENCE, knowing the job will be done right the first time and at the lowest possible cost. Cost figures are submitted for your approval before we proceed with the work.



Spindles repaired and rebuilt by POPE are dynamically balanced to the same tolerances as new Spindles. This means better surface finishes and smoother running Spindles.

FOR FAST SERVICE,
THE RIGHT BEARINGS,
BETTER WORKMANSHIP AND
LUBRICATION, AT LOWER COST

Send your Spindle repair work to

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Established 1920

261 River St. • Haverhill, Massachusetts

ASK US TO MAIL YOU A COPY OF SPINDLE REPAIR BULLETIN P-1



Key driver saves time, adds safety in forge shops

New key driver for driving die and sow block keys in forging hammers, operates pneumatically using plant air, delivers an accurate blow with controlled force of an 800-lb steam hammer, if desired. It is a portable modified horizontal hammer and is usually handled by a

fork-lift truck. Average key driving time, including carrying the key driver to and from the hammer, is cut to 20 min. Only two men are required and accidents are reduced to a relatively negligible nature. *Erie Foundry Co.*

For more data circle No. 44 on postcard, p. 97.

Finishing compound

New barrel finishing compound is designed to produce smooth finishes on light metal diecastings. Called Honite brand Micro Cut, the compound is recommended for use on diecastings of zinc, aluminum and other light metal alloys. Smoothness of the surface produced by the compound improves the quality of subsequent plating and ball burnishing operation. A very fine mineral grain in the compound gives it a mild abrasive action. *Minnesota Mining & Mfg. Co.*

For more data circle No. 45 on postcard, p. 97.

High tonnage weighing

In industrial batching scale is designed for weighing hot materials in high tonnage quantities. Key features include heavy-duty construction, an extra-large weigh hopper, a dust-tight housing covering the entire scale, separately-



housed controls, and $\frac{3}{8}$ in. steel plate contacting the material being weighed. Any granular, small lumpy material may be handled by the scale. Accuracies of 0.1 per cent at operating speeds to five weighings per min have been demonstrated. *Richardson Scale Co.*

For more data circle No. 46 on postcard, p. 97.

EDLUND PRECISION ENGINEERED EDLUND PRECISION ENGINEERED

new

SENSITIVE DRILLING MACHINE

EDLUND

Model 1F

1

Vari-Speed Control and Indicator Infinitely variable spindle speeds up to 10000 RPM. Simply turn knob for any speed within range of machine. Swift, Powerful, Positive Action.

2

Micrometer Graduated Depth Gauge Permits accurate prepositioned depth control for precision drilling. Clearly graduated to .001".

3

Adjustable Spindle Tension Control Compensates for weights of various drills. Three-handle feed lever lets operator choose best feeding position.

Specifications

Overhang 7"
Capacity (Cast Iron) $\frac{1}{8}$ "
• 1 Morse Taper or Jacobs Chuck 0- $\frac{1}{2}$ "
Speed Range—Optional

825 to 5000 RPM
1250 to 10000 RPM

Pedestal or Bench Models

Send for Free Illustrated Bulletin #160

EDLUND
MACHINERY CO.

Division Bradley-Edlund Corp., Cortland, N. Y.



EDLUND PRECISION ENGINEERED

Affiliated with Precision Castings Co., Inc. Edlund Representatives in Major Cities.

Lathe adjustable for polishing and finishing jobs

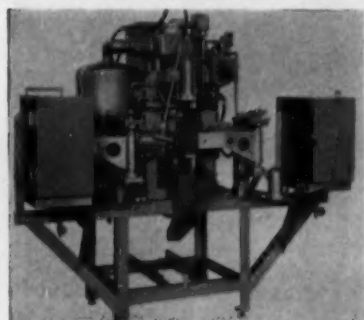
Originally designed for manually removing defects from jet engine compressor wheels, this special horizontal speed lathe is now used in the automotive industry for polishing axle shafts, torsion bars, and other parts. Spindle rotates on anti-friction bearings encased in spe-

cial cartridge type housing. Stepless work spindle speeds from 50 to 300 rpm are provided through special reduction units. Speed control permits same surface work speed to be maintained from inner to outer diameters. *Acme Mfg. Co.*
For more data circle No. 47 on postcard, p. 97.



Hollow core machine

Finished cores can be produced, without secondary operations, in less than a minute, on a new core making machine. Model 10 is a 2-station machine that requires only one operator. It makes finished cores without the use of separate dryers or core ovens, and can

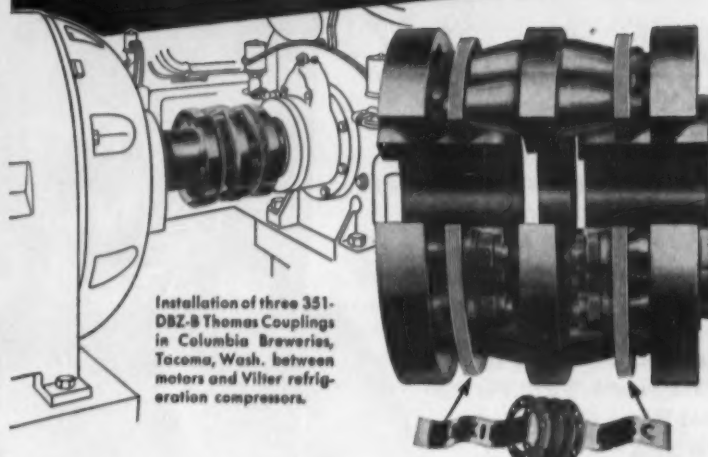


be installed as an integral unit in molding machine production lines because the cores are ready to use when removed from the core boxes. Hollow cores are said to permit faster, easier shake-out; eliminate venting problems and assure closer tolerances and more uniform castings. They also require less curing time. Model 10 is equipped with twin ovens and twin core box mounts. It accommodates core boxes up to 10x10x6 in. and will make finished cores in a 45 sec cycle. *Spo, Inc.*
For more data circle No. 48 on postcard, p. 97.

Spray paint remover

New Blister-Off is a fast acting spray paint remover. It causes hundreds of tiny blisters to form on paint, rising completely and cleanly from the surface, ready to be wiped or scraped off. One application only is needed except for exceptionally stubborn cases. *Wilbur & Williams Co.*
For more data circle No. 49 on postcard, p. 97.

THOMAS FLEXIBLE COUPLINGS... for more years of better service!



Installation of three 351-DBZ-8 Thomas Couplings in Columbia Breweries, Tacoma, Wash. between motors and Vilter refrigeration compressors.

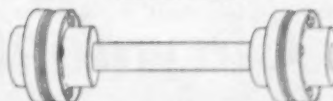
Patented Flexible Disc Rings of special steel transmit the power and provide for parallel and angular misalignment as well as free end float.

DISTINCTIVE ADVANTAGES

FACTS	EXPLANATION
NO MAINTENANCE	Requires No Attention, Visual Inspection While Operating.
NO LUBRICATION	No Wearing Parts, Freedom from Shut-downs.
NO BACKLASH	No Loose Parts, All Parts Solidly Bolted.
CAN NOT "CREATE" THRUST	Free End Float under Load and Misalignment. No Rubbing Action to cause Axial Movement.
PERMANENT TORSIONAL CHARACTERISTICS	Drives Like a Solid Coupling, Elastic Constant Does Not Change, Original Balance is Maintained.



THOMAS COUPLINGS ARE MADE FOR A WIDE RANGE OF SPEEDS, HORSEPOWER AND SHAFT SIZES.



Write for our new Engineering Catalog No. 51A



THOMAS FLEXIBLE COUPLING COMPANY
Largest Exclusive Coupling Manufacturer in the World
WARREN, PENNSYLVANIA, U.S.A.

can I use Claymont Stainless-Clad to good advantage?

Many companies in the chemical industry and others engaged in processing operations have asked themselves that question—and then switched to Claymont Stainless-Clad Plates in place of costly solid stainless steel.

They found that for numerous types of tanks, vessels and processing equipment, Claymont Stainless-Clad Plates give effective resistance to corrosion and protection against product contamination—plus substantial savings in equipment costs.

It may be that your particular processing job lends itself to the use of money-saving stainless-clad. Why not find out. For detailed information contact our nearest sales office or write direct to Claymont Steel Products, Wickwire Spencer Steel Division of CF&I, 813 West Street, Wilmington 99, Delaware.



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illustrated above.

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Large Diameter Welded Steel Pipe • Flame Cut Steel Plate Shapes

2842

The Iron Age SUMMARY...

Steel industry operating at close to 100 pct of peacetime capacity . . . But strong demand may bring reserve furnaces into production.

Production . . . The steel industry is operating at close to 100 pct of its peacetime capacity. While this week's operating rate is listed as 82.0 pct of official rated capacity, one point higher than last week, it should be remembered that between a fourth and a fifth of official capacity is being carried as a defense reserve.

In many instances this defense reserve capacity would have been scrapped if the government had not asked steel companies to keep it standing so that it could be used in event of war or extreme emergency. Much of this reserve capacity is old or inefficient. And steel companies will employ it only if demand becomes so strong they are compelled to bring it back into production.

It is admittedly difficult to draw an exact line through the industry's capacity and say that all to the left of it is marginal reserve. But a careful check of industry sources places the marginal capacity at 15 million to 20 million or more net tons.

New Orders . . . New business continues to pour in faster than steel is being turned out. One midwestern mill opened order books for second quarter (more or less a formality, since its customers are on quotas anyway) and promptly

booked up solid on cold-rolled sheets and galvanized sheets. Both are major products with this producer, and its customers are clamoring to book orders for more tonnage than it will accept.

Wire products are the sleeper in the steel market. While other products have been getting most of the attention, demand for both merchant wire and manufacturers wire has been moving up.

The reasons are easy to find. Manufacturers wire is stronger largely on the basis of heavy orders for automotive and furniture upholstery. And merchant wire is getting a boost from earlier-than-expected buying for farm use.

Railroads Back . . . A hopeful sign is evident this week in the most dismal of all steel markets—railroads. Railroad purchases are definitely up, and it appears that the dam holding back rail buying may have been broken. The key here is carloadings which have been rising.

There are also some hopeful signs that the belated inventory correction in oil country goods may not continue for more than 60 days. This industry is still operating at very high level, expects to set a new record this year, and could wipe out steel company stocks in a hurry.

Steel Output, Operating Rates

Production	This Week†	Last Week	Month Ago	Year Ago
(Net tons, 000 omitted)	1,975	1,960	1,950	1,772
Ingot Index (1947-49=100)	122.9	122.0	121.4	110.3
Operating Rates				
Chicago	86.0	85.0*	87.5	77.5
Pittsburgh	79.0	78.0*	78.0	88.0
Philadelphia	73.0	73.0*	73.0	80.0
Volley	78.0	76.0*	80.0	73.0
West	90.0	87.0	85.5	74.0
Detroit	100.0	91.0	92.0	85.0
Buffalo	100.0	100.0	100.0	63.5
Cleveland	82.5	83.0	89.5	83.0
Birmingham	74.0	74.5	67.0	95.0
S. Ohio River	95.5	94.5	81.0	84.5
Wheeling	97.0	98.0*	88.0	85.0
St. Louis	78.0	74.5	79.0	64.0
Northeast	70.0	74.5	75.5	77.0
Aggregate	82.0	81.0	82.0	75.0

*Revised. †Tentative

Prices At A Glance

(cents per lb unless otherwise noted)

	This Week	Week Ago	Month Ago	Year Ago
Composite prices				
Finished Steel, base	4.797	4.797	4.797	4.634
Pig Iron (gross ton)	\$56.59	\$56.59	\$56.59	\$56.59
Scrap, No. 1 hvy (gross ton)	\$34.33	\$34.17	\$32.00	\$28.83
Nonferrous				
Aluminum, ingot	22.70	22.20	22.20	21.50
Copper, electrolytic	30.00	30.00	30.00	29.75
Lead, St. Louis	14.80	14.80	14.80	13.30
Magnesium, ingot	27.75	27.75	27.75	27.75
Nickel, electrolytic	67.67	67.67	67.67	63.08
Tin, Straits, N. Y.	85.875	87.125	89.375	84.50
Zinc, E. St. Louis	11.50	11.50	11.50	10.00

Gray Market In Sheets, Strip

Consumers, caught short, are paying \$10 a ton premium . . . New sources in market for cold-rolled, galvanized seconds, rejects . . . Market tight through April.

◆ THE GRAY MARKET may be coming back in cold-rolled and galvanized sheets. It's an old story; desperate consumers, caught short by the overwhelming demand for these products, apparently are willing to pay a premium price to get what they need.

Producers agree that conditions are ripe for a brief comeback by "fast buck" boys, who largely passed out of the picture during the final quarter of 1953. One indication is the number of inquiries concerning the possibility of making conversion arrangements. This in itself means a premium price, if such deals can be made.

Furthermore, THE IRON AGE learned that other-than-usual sources are in the market for rejects and seconds in cold-rolled and galvanized. For the consumer who can't fill his requirements from regular mill sources the premium may run around \$10 per ton.

Working to the advantage of gray market operators is the imbalance conditions of the mills today. Ingot and finishing capacity have been dovetailed to the point that legitimate conversion arrangements are difficult to make. A supply of rejects and seconds is in a better position to make a killing.

Gray market in cold-rolled could be with us until April, at least, galvanized sheets, demand for which is based on a broader cross-section of industry, could be tough beyond that.

Due to increases in price of molybdenum, U. S. Steel Corp. increased prices of moly-bearing alloy and stainless steels effective Jan. 5. Stainless types 316, 316L, and USS 18-8 Mo-Cb, 18-8 Mo-Cb-Ta, were boosted $\frac{1}{2}$ ¢ per lb; type 317 went up $\frac{3}{4}$ ¢ per lb. Grade extras on alloy steels were increased an average of 1/10¢ per lb.

SHEETS AND STRIP . . . Just one way to describe situation in cold-rolled sheets—demand is outstripping supply. In Chicago one mill cannot meet demand for second quarter. A mill in Pittsburgh is setting new production records trying to keep up with orders. In Cleveland, orders are booked into April on wide and narrow widths. Hot-rolled sheets are extended to five weeks in Chicago, can be booked in first quarter in Detroit. With slit coils less available, cold-rolled strip deliveries are lengthening but are still no problem to obtain.

GALVANIZED SHEETS . . . Demand is ahead of supply. Some centers are booked solid through second quarter. It seems that only relief will be from increased supply through expansion of capacity. New capacity is scheduled to come into production this year.

BARS . . . Bar producers are not unhappy, but the market is far from tight in first quarter. Alloy demand appears to be better than carbon. While automotive demand has improved, producers are disappointed; the upward trend has been less sharp than expected. This is probably due to heavy inventories and inroads by castings.

PLATES . . . Despite little or no improvement in linepipe and railroad demand, the plate market is picking up. The improvement is relative, however, and deliveries are in terms of weeks rather than months, unlike many other steel products.

STRUCTURALS . . . Although a pickup is expected soon, the market is fairly easy. Highway and construction business in the offing are expected to tighten demand for various kinds of structurals.

PIPE AND TUBULAR . . . Inventory correction in oil country goods appears to have worked itself out. Oil well drillings this year may equal or exceed record number of 1954. Incoming orders indicate that oil companies are beginning to move; producers are looking for a backlog to pile up beginning in first quarter. Producing level at present is considered good. Mechanical tubing continues slow; one mill has begun campaign to strengthen his share of this market. Merchant pipe demand continues good. Oil country goods which had been lagging due to inventory correction are now beginning to pick up. Upsurge is looked for about the middle of the first quarter.

WIRE . . . Market is gaining strength. January ordering is encouragingly strong. Manufacturer's wire is gaining more strength from automotive and furniture demand despite some weakness in farm outlook, prospects for merchant wire are considered good. In Cleveland, farm ordering has shown an earlier-than-usual upturn, and warehouses are beginning to step up demand. Construction products are beginning to pick up again after a seasonal let-down.

WAREHOUSE . . . Chicago market is strong; pickup there extends into plate, bar, and some structural; a few spot orders based on shortage buying have materialized; one case has been hot-rolled sheet for appliance industry. In other centers the pickup has not been as noticeable, although the picture definitely is better than last month. Generally warehouses look for slightly better business in 1955 than last year which was off about 25 pct from 1953. In 1954, distributors received 14.8 million tons and shipped about 12.4 million tons. Warehouse inventories are good with exception of galvanized and flat-rolled products. Business is expected to show an upturn in the first quarter.

Purchasing Agent's Checklist

- HOMES:** Owners will spend \$7 billion on repairs in '55. . . . p. 35
- ALUMINUM:** Reynolds boosts pig, ingot prices p. 36
- STEEL:** 1955 output up 7-8 million tons says Republic's C. M. White p. 37
- RAILROADS:** Equipment buying moves off the bottom. p. 38
- FOIL:** Last year's volume of wrap topped '53's by 30 pct. p. 43

Comparison of Prices

(Effective Jan. 11, 1955)

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Price advances over previous week are printed in Heavy Type; declines appear in *Italics*.

	Jan. 11 1955	Jan. 4 1955	Dec. 14 1954	Jan. 12 1954
Flat-Rolled Steel: (per pound)				
Hot-rolled sheets	4.95¢	4.95¢	4.95¢	3.925¢
Cold-rolled sheets	4.95	4.95	4.95	4.775
Galvanized sheets (10 ga.)	5.45	5.45	5.45	5.275
Hot-rolled strip	4.95	4.95	4.95	3.925
Cold-rolled strip	5.79	5.79	5.79	5.513
Plate	4.225	4.225	4.225	4.10
Plates wrought iron	9.30	9.30	9.30	9.30
Stain's C-R strip (No. 302)	41.50	41.50	41.50	41.50
Tin and Terplate: (per base box)				
Tinplate (4.50 lb.) cokes	\$9.05	\$9.05	\$9.05	\$8.95
Tinplate, electro (0.50 lb.)	7.75	7.75	7.75	7.65
Special coated mfg. ternes	7.85	7.85	7.85	7.75
Bars and Shapes: (per pound)				
Merchant bars	4.30¢	4.30¢	4.30¢	4.16¢
Cold-finished bars	5.40	5.40	5.40	5.20
Alloy bars	5.075	5.075	5.075	4.875
Structural shapes	4.25	4.25	4.25	4.10
Stainless bars (No. 302)	35.50	35.50	35.50	35.50
Wrought iron bars	10.40	10.40	10.40	10.40
Wire: (per pound)				
Bright wire	5.75¢	5.75¢	5.75¢	5.525¢
Rails: (per 100 lb.)				
Heavy rails	\$4.45	\$4.45	\$4.45	\$4.325
Light rails	5.35	5.35	5.35	5.20
Semifinished Steel: (per net ton)				
Re-rolling billets	\$64.00	\$64.00	\$64.00	\$62.00
Slabs, re-rolling	64.00	64.00	64.00	62.00
Forging billets	78.00	78.00	78.00	75.50
Alloy blooms, billets, slabs	86.00	86.00	86.00	82.00
Wire Rod and Skelp: (per pound)				
Wire rods	4.675¢	4.675¢	4.675¢	4.525¢
Skelp	3.90	3.90	3.90	3.75
Finished Steel Composite: (per pound)				
Base price	4.797¢	4.797¢	4.797¢	4.634¢

Finished Steel Composite

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

Pig Iron Composite

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Steel Scrap Composite

Average of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

	Jan. 11 1955	Jan. 4 1955	Dec. 14 1954	Jan. 12 1954
Pig Iron: (per gross ton)				
Foundry, del'd Phila.	\$61.19	\$61.19	\$61.19	\$61.19
Foundry, Valley	54.50	54.50	54.50	54.50
Foundry, Southern, Cin'ti	60.43	60.43	60.43	60.43
Foundry, Birmingham	52.88	52.88	52.88	52.88
Foundry, Chicago	54.50	54.50	54.50	54.50
Basic, del'd Philadelphia	60.27	60.27	60.27	60.27
Basic, Valley furnace	56.00	56.00	56.00	56.00
Malleable, Chicago	54.50	54.50	54.50	54.50
Malleable, Valley	54.50	54.50	54.50	54.50
Ferromanganese, cents per lb.	9.50¢	9.50¢	9.50¢	10.00¢
‡ 74-76 pct Mn base.				
Pig Iron Composite: (per gross ton)				
Pig iron	\$56.59	\$56.59	\$56.59	\$56.59
Scrap: (per gross ton)				
No. 1 steel, Pittsburgh	\$36.50	\$36.50	\$32.50	\$30.50
No. 1 steel, Phila. area	32.00	31.50	31.00	27.50
No. 1 steel, Chicago	34.50	34.50	32.50	28.50
No. 1 bundles, Detroit	27.25	26.50	26.50	21.50
Low phos., Youngstown	36.50	36.50	35.50	31.00
No. 1 mach'y cast, Pittsburgh	42.50	42.50	42.50	42.50
No. 1 mach'y cast, Philadel'a.	42.00	42.00	42.00	40.50
No. 1 mach'y cast, Chicago	45.00	44.50	43.50	36.50
Steel Scrap Composite: (per gross ton)				
No. 1 heavy melting scrap	\$34.33	\$34.17	\$32.00	\$28.83
Coke, Connellsville: (per net ton at oven)				
Furnace coke, prompt	\$14.38	\$14.38	\$14.38	\$14.38
Foundry coke, prompt	16.75	16.75	16.75	16.75
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electrolytic, Conn.	30.00	30.00	30.00	29.75¢
Copper, Lake, Conn.	30.00	30.00	30.00	30.00
Tin, Straits, New York	85.075¢	87.125¢	89.375	84.50
Zinc, East St. Louis	11.50	11.50	11.50	10.00
Lead, St. Louis	14.80	14.80	14.80	13.90
Aluminum, virgin ingot	22.70¢	22.20	22.20	21.50
Nickel, electrolytic	67.67	67.67	67.67	63.08
Magnesium, ingot	27.75	27.75	27.75	27.75
Antimony, Laredo, Tex.	28.50	28.50	28.50	28.50
† Tentative. ‡ Average. * Revised.				

PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

STAINLESS STEEL

—To identify producers, see Key on P. 123—

Base price cents per lb. f.o.b. mill.

Producing Point	Basic	Fdry.	Mall.	Beas.	Low Phos.
Bethlehem B3	58.00	58.50	59.00	59.50	
Birmingham R3	52.38	52.88			
Birmingham W9	52.38	52.88			
Birmingham U4	52.38	52.88	56.50		
Buffalo R3	56.00	56.50	57.00		
Buffalo T11	56.00	56.50	57.00		
Buffalo W6	56.00	56.50	57.00		
Chicago J4	56.00	56.50	56.50	57.00	
Cleveland A5	56.00	56.50	56.50	57.00	61.00
Cleveland R3	56.00	56.50	56.50		
Duquesne L3	52.50	52.50	52.50		
Duluth J4	56.00	56.50	56.50	57.00	
Erie J4	56.00	56.50	56.50	57.00	
Everett M6	61.00	61.50			
Fontana K1	62.00	62.50			
Geneva, Utah C7	56.00	56.50			
Granite City G2	57.90	58.40	58.90		
Hubbard Y1			56.50		
Minnequa C6	58.00	59.00	59.00		
Monessen P6	56.00				
Neville Ind. P4	56.00	56.50	56.50		
Pittsburgh U1	56.00			57.00	
Sharpsville S3	56.00	56.50	56.50	57.00	
So. Chicago R3	56.00		56.50		
Steelton B3	58.00	58.50	59.00	59.50	64.00
Swadland A2	58.00	58.50	59.00	59.50	
Toledo J4	56.00	56.50	56.50	57.00	
Troy, N. Y. R3	58.00	58.50	59.00	59.50	64.00
Youngstown Y1			56.50	57.00	
N. Tonawanda T1	56.50	57.00			

DIFFERENTIALS: Add 50¢ per ton for each 0.25 pct silicon over base (1.75 to 2.25 pct except low phos., 1.75 to 2.00 pct); 50¢ per ton for each 0.50 pct manganese over 1 pct; 32¢ per ton for 0.5 to 0.75 pct nickel; \$1 for each additional 0.25 pct nickel. Subtract 35¢ per ton for phosphorus content 6.75 and over.

Silvery Iron: Buffalo, J1, \$66.25; Jackson, J1, G1, \$65.00. Add \$1.00 per ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 17 pct. Add \$1 per ton for 0-75 pct or more phosphorus. Add 75¢ for each 0.50 pct manganese over 1.6 pct. Bessemer ferromanganese prices are \$1 over comparable silvery iron.

Product	301	302	303	304	316	321	347 Ch	410	416	430
Ingot, re-rolling	16.75	17.75	19.25	19.00	29.75	23.00	35.50	14.00	—	14.25
Slabs, billets, re-rolling	21.00	23.25	25.25	24.50	38.00	30.25	46.75	18.25	—	18.50
Forg. discs, die blocks, rings	39.00	39.00	42.00	41.25	61.75	46.25	—	31.00	31.75	31.75
Billets, forging	30.00	30.25	32.75	31.75	48.25	36.00	54.75	24.00	24.50	24.50
Bars, wires, structurals	35.75	36.00	38.75	38.00	57.25	43.75	64.25	28.75	29.25	29.25
Plates	37.75	38.00	40.25	40.50	60.50	46.50	69.25	30.00	30.50	30.50
Sheets	41.75	42.00	49.25	44.50	64.50	51.25	77.50	34.25	41.25	34.75
Strip, hot-rolled	38.25	32.50	37.25	35.00	55.00	41.75	63.00	26.25	—	27.00
Strip, cold-rolled	38.75	42.00	46.00	44.50	64.75	51.50	77.50	34.25	41.25	34.75

STAINLESS STEEL PRODUCING POINTS:

Sheets: Midland, Pa., C11; Brackenridge, Pa., A3; Butler, Pa., A7; McKeesport, Pa., U1; Washington, Pa., W2, J2; Baltimore, Md., J2; Middletown, O., A7; Massillon, O., R3; Gary, Ind., U1; Bridgeville, Pa., U2; New Castle, Ind., J2; Ft. Wayne, J4.

Strip: Midland, Pa., C11; Cleveland, A5; Carnegie, Pa., S9; McKeesport, Pa., F1; Reading, Pa., C2; Washington, Pa., W2; W. Leeburg, Pa., A3; Bridgeville, Pa., U2; Detroit, M2; Canton-Massillon, O., R3; Middletown, O., A7; Harrison, N. J., D3; Youngstown, O., S1; Butler, Pa., A7; Wallingford, Conn., U3 (25¢ per lb higher); W1 (25¢ per lb higher); New Bedford, Mass., R6.

Bar: Baltimore, A7; Duquesne, Pa., U1; Munhall, Pa., U1; Reading, Pa., C2; Titusville, Pa., U2; Washington, Pa., J2; McKeesport, Pa., U1; Bridgeville, Pa., U2; Dunkirk, N. Y., A3; Massillon, O., R3; Chicago, Ill., U1; Syracuse, N. Y., C11; Watervliet, N. Y., A5; Waukegan, Ill., Canton, O., T5; Ft. Wayne, J4.

Wire: Waukegan, Ill., A5; Massillon, O., R3; McKeesport, Pa., F1; Ft. Wayne, J4; Harrison, N. J., D3; Baltimore, A7; Dunkirk, A3; Monessen, Pa., J1; Syracuse, C11; Bridgeville, U2.

Structurals: Baltimore, A7; Massillon, O., R3; Chicago, Ill., J4; Watervliet, N. Y., A5; Syracuse, C11.

Plates: Brackenridge, Pa., A3; Chicago, Ill., U1; Munhall, Pa., U1; Midland, Pa., C11; New Castle, Ind., J2; Middletown, A7; Washington, Pa., J2; Cleveland, Massillon, R3; Coatesville, Pa., C15.

Forged discs, die blocks, rings: Pittsburgh, C11; Syracuse, C11; Ferndale, Mich., A3; Washington, Pa., J2.

Forgings billets: Midland, Pa., C11; Baltimore, A7; Washington, Pa., J2; McKeesport, F1; Massillon, Canton, O., R3; Watervliet, A3; Pittsburgh, Chicago, U1; Syracuse, C11.

Firmer Tone Throughout Market

Mills still holding back on major purchases but climbing rate sparks optimism . . . Export buying remains strong . . . Composite climbs 16¢ to \$34.33.

◆ A FIRMER tone was felt throughout the scrap market this week. There were indications from several centers that mills were about to come into the market for considerable tonnage.

The rising operating rate has sparked optimism throughout the industry. In Philadelphia the appearance of a major consumer in the market coupled with continued strong export buying served to firm up the price of No. 1 steel in that market.

THE IRON AGE Heavy Melting Steel Scrap Composite rose 16¢ to a figure of \$34.33 per gross ton.

A sizable purchase of No. 1 steel in Cleveland was the basis for a 50¢ increase in the grade with secondary grades following.

Pittsburgh . . . The market appears to be marking time. Although an independent mill is expected to make a purchase soon, nothing of consequence has happened since a major consumer advanced prices of open-hearth grades \$2 to \$4 on a relatively small tonnage. There is a difference of opinion as to which way the market is going. On the basis of steel ingot rate, the outlook is firm.

Chicago . . . In the absence of strong new mill activity, Chicago scrap continued strong, though brokers were digging in their heels at prices demanded at the dealer level. Though the brakes went on last week, dealer sales of \$34.50 on \$35 consumer orders were reported as late as Thursday. Cast continued to show strength, and despite reports that No. 2 dealer bundles were available for broker purchase at \$23 late last week, there was great strength in the dealer market as evidenced by the sale above. Railroad continued very strong with the exception of axles. Rumors of dealer pessimism seem thus far to have been overplayed.

Philadelphia . . . Export market is firm but probably can't meet any possible increase in prices. A large nearby consumer is said to be low in inventory and on the verge of entering the market. In that case price of openhearth grades could be pushed up 50¢ to \$1. A sizable purchase of No. 2 steel by a large consumer last week pushed that price up \$1. No. 1 steel firmed to cut the price spread by \$1 on the basis of general optimism but the top figure remained unchanged.

Cleveland . . . The Cleveland market went up 50 cents on No. 1 heavy melting on basis of a purchase by one local mill with secondary grades following rise. Most dealers feeling bullish on underlying strength but mills are holding off on buying. Mill buyers feel they would have to pay over present market to get substantial tonnages. Some blast furnace tonnage also moved in Cleveland on special deal at \$2 over market. Valley market has cooled off for month after spurt of last two weeks on secondary grades. Early this week one major buyer held up all shipments into Valley due to oversupply. One mill bought tonnage of No. 1 heavy melting with special specifications at the usual 50 cents premium.

Buffalo . . . Local mills refuse to recognize higher prices and strength in other markets. Prices are nominally unchanged. No bidding is reported above current levels. However, a 100 pct operating rate supports hope for a price rise. Low phos advanced 50¢ a ton on a purchase made by a motor plant.

Detroit . . . Apparent strength in other areas has affected Detroit's market to only a moderate extent. Heavy inventories at local mills are responsible for a complacent attitude, but there is some evidence that sources of No. 2 bundles are drying up at current prices. Turnings continue to show a fair amount of strength.

St. Louis . . . To meet advances of competitive markets, leading district consumers increased their prices for No. 2 hvy melting steel and bundle grades \$1 per ton. Buying continues on a conservative basis. No. 1 RR hvy melting is also up \$1.

Boston . . . There is no particular activity although there was a 50¢ to \$1 increase through most of the list. But brokers (now that the scrap convention is over) are expecting that things will keep going and improve a little. Exports are still a big thing in Boston. No market for unstripped motor blocks. The price increases were welcomed.

New York . . . Export business continues to be the mainstay of this market with a steady tonnage moving out at prevailing prices. Mills continue to stay out of the market for the most part. Feeling in the trade is that prices won't turn upwards until more domestic tonnage begins to move.

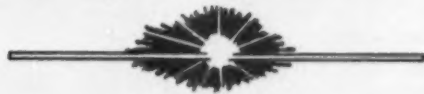
Birmingham . . . Only limited amounts of scrap were moving in the district this week. The largest buyer of steel scrap was out of the market, but another mill made limited purchases. Some foundries were in the market for limited amounts of cast but the larger buyers, many of whom ordered last week for mid-January and later deliveries were not buying. Brokers, dealers and many buyers were attending the national convention of the Institute of Scrap Iron and Steel at Miami, Fla., last week.

Cincinnati . . . Industrial lists brought \$1 per ton over December but dealers have not been able to budge prices. Some barge shipments still going to Pittsburgh since local buyers are holding off. Shipments are mostly secondary grades with little local demand.

West Coast . . . Mills and dealers report prices, supply, and demand hold unchanged. Continued export activity and mill buying are propping prices at present levels. This will probably continue through January, for two boatloads are said to be scheduled out of Los Angeles and several out of Oakland (San Francisco Bay) this month. Mills have made their commitments for the month. Quality is running better and rejects are tapering off, one mill reports. Cast market is weakening in San Francisco and Los Angeles, with a few sales at \$1-2 below quoted prices.

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for heavy-duty welded equipment



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strength of "T-1" Steel to increase the service life of steel mill equipment and rotating machines. You can use its amazing sub-zero toughness and resistance to abuse in excavating and mining equipment that must operate outdoors in the most severe weather. In fact, with "T-1" Steel you can increase the strength, dependability, and safety of heavy duty equipment for use at *any* atmospheric temperature. Send the coupon for complete information.

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UNITED STATES STEEL

Scrap Prices (Effective Jan. 13, 1955)

Pittsburgh

No. 1 hvy. melting	\$36.00 to \$37.00
No. 2 hvy. melting	32.00 to 34.00
No. 1 bundles	36.00 to 37.00
No. 2 bundles	28.00 to 29.00
Machine shop turn.	18.00 to 19.00
Mixed bor. and ma. turns.	18.00 to 19.00
Shoveling turnings	22.00 to 23.00
Cast iron borings	22.00 to 23.00
Low phos. punch'gs, plate	40.00 to 41.00
Heavy turnings	33.00 to 34.00
No. 1 RR. hvy. melting	39.00 to 40.00
Scrap rails, random lgth.	42.00 to 43.00
Rails 2 ft and under	48.00 to 49.00
RR. steel wheels	41.00 to 42.00
RR. spring steel	41.00 to 42.00
RR. couplers and knuckles	41.00 to 42.00
No. 1 machinery cast.	42.00 to 43.00
Cupola cast.	36.00 to 37.00
Heavy breakable cast.	32.00 to 33.00

Chicago

No. 1 hvy. melting	\$34.00 to \$35.00
No. 2 hvy. melting	32.00 to 33.00
No. 1 factory bundles	36.00 to 37.00
No. 1 dealers' bundles	34.00 to 35.00
No. 2 dealers' bundles	24.00 to 25.00
Machine shop turn.	17.00 to 18.00
Mixed bor. and turn.	19.00 to 20.00
Shoveling turnings	19.00 to 20.00
Cast iron borings	19.00 to 20.00
Low phos. forge crops	39.00 to 40.00
Low phos. punch'gs, plate	37.00 to 38.50
Low phos. 3 ft and under	36.00 to 37.00
No. 1 RR. hvy. melting	38.00 to 39.00
Scrap rails, random lgth.	42.00 to 44.00
Rolling rails	53.00 to 54.00
Rails 2 ft and under	50.00 to 51.00
Locomotive tires, cut	36.00 to 37.00
Cut bolsters & slide frames	37.00 to 38.00
Angles and splice bars	44.00 to 45.00
RR. steel car axles	43.00 to 44.00
RR. couplers and knuckles	38.00 to 39.00
No. 1 machinery cast.	44.00 to 46.00
Cupola cast.	39.00 to 41.00
Heavy breakable cast	32.00 to 33.00
Cast iron brake shoes	32.00 to 34.00
Cast iron car wheels	35.00 to 36.00
Malleable	44.00 to 45.00
Stove plate	32.00 to 33.00

Philadelphia Area

No. 1 hvy. melting	\$31.50 to \$32.50
No. 2 hvy. melting	29.00 to 30.50
No. 1 bundles	31.50 to 32.50
No. 2 bundles	24.50 to 25.50
Machine shop turn.	17.00 to 18.00
Mixed bor. short turn.	19.00 to 20.00
Cast iron borings	19.00 to 20.00
Shoveling turnings	20.00 to 21.00
Clean cast chem. borings	27.00 to 28.00
Low phos. 5 ft and under	33.50 to 34.00
Low phos. 2 ft and under	34.50 to 35.00
Low phos. punch'gs	34.50 to 35.00
Elec. furnace bundles	32.50 to 33.00
Heavy turnings	29.00 to 30.00
RR. steel wheels	34.50 to 35.00
RR. spring steel	34.50 to 35.00
Rails 18 in. and under	45.00 to 46.00
Cupola cast.	34.00 to 35.00
Heavy breakable cast.	35.00 to 36.50
Cast iron car wheels	41.00 to 42.00
Malleable	41.00 to 42.00
Unstripped motor blocks	27.00 to 28.00
No. 1 machinery cast.	41.00 to 42.00
Charging box cast.	35.00 to 36.00

Cleveland

No. 1 hvy. melting	\$33.50 to \$34.50
No. 2 hvy. melting	30.00 to 31.00
No. 1 bundles	33.00 to 34.00
No. 2 bundles	27.00 to 28.00
No. 1 busheling	23.50 to 24.50
Machine shop turn.	15.00 to 16.00
Mixed bor. and turn.	20.00 to 21.00
Shoveling turnings	20.00 to 21.00
Cast iron borings	20.00 to 21.00
Cut struct'l & plates, 3 ft & under	37.00 to 38.00
Drop forge flashings	33.00 to 34.00
Low phos. punch'gs, plate	36.00 to 37.00
Foundry steel, 2 ft & under	36.50 to 37.50
No. 1 RR. hvy. melting	34.00 to 35.00
Rails 2 ft and under	47.00 to 48.00
Rails 18 in. and under	49.00 to 50.00
Railroad grate bars	27.00 to 28.00
Steel axle turnings	27.00 to 28.00
Railroad cast.	45.00
No. 1 machinery cast.	44.00 to 45.00
Stove plate	35.00 to 36.00
Malleable	44.00

Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Youngstown

No. 1 hvy. melting	\$36.00 to \$37.00
No. 2 hvy. melting	32.00 to 33.00
No. 1 bundles	36.00 to 37.00
No. 2 bundles	27.50 to 28.50
Machine shop turn.	19.00 to 20.00
Shoveling turnings	22.00 to 23.50
Cast iron borings	22.00 to 23.50
Low phos. plate	36.00 to 37.00

Buffalo

No. 1 hvy. melting	\$30.00 to \$31.00
No. 2 hvy. melting	25.50 to 26.50
No. 1 busheling	30.00 to 31.00
No. 1 bundles	30.00 to 31.00
No. 2 bundles	23.50 to 24.50
Machine shop turn.	18.00 to 19.00
Mixed bor. and turn.	20.00 to 21.00
Shoveling turnings	21.00 to 22.00
Cast iron borings	20.00 to 21.00
Low phos. plate	33.50 to 34.50
Scrap rails, random lgth.	35.00 to 36.00
Rails 2 ft and under	42.00 to 43.00
RR. steel wheels	36.00 to 37.00
RR. spring steel	36.00 to 37.00
RR. couplers and knuckles	36.00 to 37.00
No. 1 machinery cast.	42.00 to 43.00
No. 1 cupola cast.	37.00 to 38.00

Detroit

Brokers buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$25.00 to \$26.00
No. 2 hvy. melting	18.00 to 19.00
No. 1 bundles, openhearth	27.00 to 27.50
No. 2 bundles	18.00 to 19.00
New busheling	25.00 to 26.00
Drop forge flashings	25.00 to 26.00
Machine shop turn.	11.00 to 12.00
Mixed bor. and turn.	13.00 to 14.00
Shoveling turnings	14.00 to 15.00
Cast iron borings	14.00 to 15.00
Low phos. punch'gs, plate	36.00 to 37.00
No. 1 cupola cast.	24.00
Heavy breakable cast.	25.00
Stove plate	30.00
Automotive cast.	38.00

St. Louis

No. 1 hvy. melting	\$31.00 to \$32.00
No. 2 hvy. melting	29.00 to 30.00
No. 1 bundles	30.00 to 31.00
No. 2 bundles	24.50 to 25.50
Machine shop turn.	15.50 to 16.50
Cast. iron borings	15.50 to 16.50
Shoveling turnings	17.00 to 18.00
No. 1 RR. hvy. melting	34.00 to 35.00
Rails, random lengths	39.00 to 40.00
Rails, 18 in. and under	45.50 to 46.50
Locomotive tires, uncut	32.50 to 33.50
Angles and splice bars	33.50 to 34.50
Std. steel car axles	34.50 to 35.50
RR. spring steel	33.50 to 34.50
Cupola cast.	42.00 to 43.00
Hvy. breakable cast.	33.00 to 34.00
Cast iron brake shoes	29.00 to 30.00
Stove plate	34.00 to 35.00
Cast iron car wheels	32.50 to 34.50
Malleable	35.00 to 36.00
Unstripped motor blocks	22.50 to 23.50

Boston

Brokers buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$23.00 to \$24.00
No. 2 hvy. melting	18.00 to 19.00
No. 1 bundles	24.00 to 25.00
No. 2 bundles	16.00 to 17.00
No. 1 busheling	22.50 to 23.50
Elec. furnace, 3 ft & under	24.00 to 25.00
Machine shop turn.	7.50 to 8.50
Mixed bor. and short turn.	9.00 to 10.00
Shoveling turnings	10.00 to 11.00
Clean cast chem. borings	18.00 to 19.00
No. 1 machinery cast.	29.00 to 30.00
Mixed cupola cast.	26.00 to 27.00
Heavy breakable cast.	25.00 to 26.00
Stove plate	25.00 to 26.00
Unstripped motor blocks	18.00 to 19.00

New York

Brokers buying prices per gross ton, on cars:

No. 1 hvy. melting	\$27.00 to \$28.00
No. 2 hvy. melting	24.00 to 25.00
No. 2 bundles	20.00 to 21.00
Machine shop turn.	9.00 to 10.00
Mixed bor. and turn.	10.00 to 11.00
Shoveling turnings	12.00 to 13.00
Clean cast chem. borings	20.00 to 21.00
No. 1 machinery cast.	35.00 to 36.00
Mixed yard cast.	29.00 to 30.00
Charging box cast.	29.00 to 30.00
Heavy breakable cast.	27.00 to 28.00
Unstripped motor blocks	22.00 to 23.00

Birmingham

No. 1 hvy. melting	\$28.00 to \$29.00
*No. 2 hvy. melting	24.00 to 25.00
No. 1 bundles	22.00 to 23.00
No. 2 bundles	19.00 to 20.00
No. 1 busheling	23.00 to 24.00
Machine shop turn.	14.00 to 15.00
Shoveling turnings	15.00 to 16.00
Cast iron borings	15.00 to 16.00
Electric furnace bundles	29.00 to 30.00
Bar crops and plate	33.00 to 34.00
Structural and plate, 2 ft.	33.00 to 34.00
No. 1 RR. hvy. melting	32.00 to 33.00
Scrap rails, random lgth.	36.00 to 37.00
Rails, 18 in. and under	40.00 to 41.00
Angles & splice bars	38.00 to 39.00
Rolling rails	41.00 to 42.00
No. 1 cupola cast.	45.00 to 46.00
Stove plate	42.00 to 43.00
Charging box cast.	22.00 to 23.00
Cast iron car wheels	33.00 to 34.00
Unstripped motor blocks	35.00 to 36.00
Mashed tin cans	15.00 to 16.00

*Price quoted in effect Dec. 2, 1954 to date.

Cincinnati

Brokers buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$21.00 to \$22.00
No. 2 hvy. melting	26.00 to 27.00
No. 1 bundles	31.00 to 32.00
No. 2 bundles	21.00 to 22.00
Machine shop turn.	13.00 to 14.00
Mixed bor. and turn.	17.00 to 18.00
Shoveling turnings	17.00 to 18.00
Cast iron borings	17.00 to 18.00
Low phos., 18 in. & under	36.00 to 37.00
Rails, random lengths	38.00 to 39.00
Rails, 18 in. and under	46.00 to 47.00
No. 1 cupola cast.	39.00 to 40.00
Hvy. breakable cast.	34.00 to 35.00
Drop broken cast.	41.00 to 42.00

San Francisco

No. 1 hvy. melting	\$24.00
No. 2 hvy. melting	20.00
No. 1 bundles	23.00
No. 2 bundles	18.00
No. 3 bundles	14.00
Machine shop turn.	6.00
Cast iron borings	9.00
No. 1 RR. hvy. melting	24.00
No. 1 cupola cast.	40.00

Los Angeles

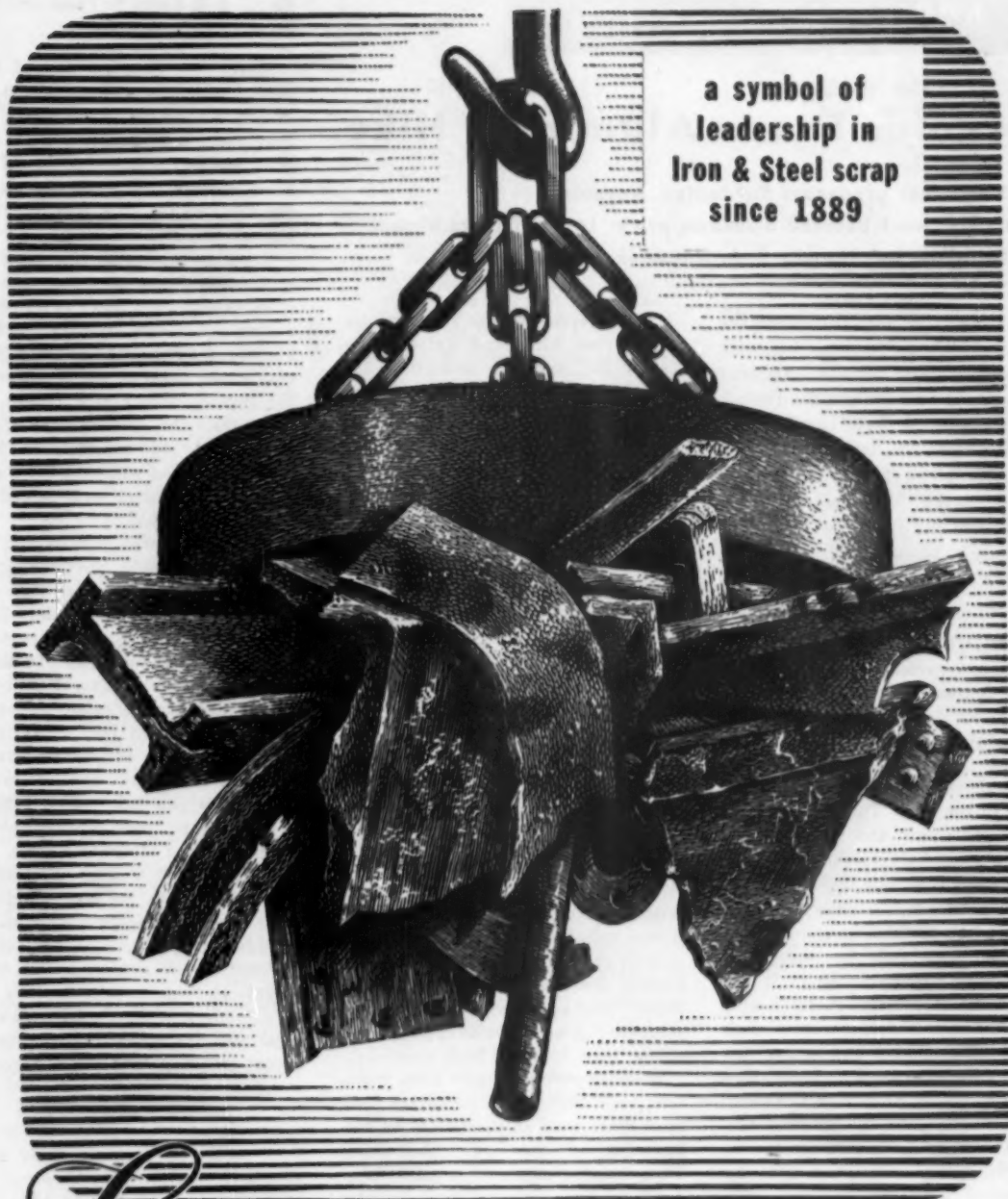
No. 1 hvy. melting	\$28.00
No. 2 hvy. melting	24.00
No. 1 bundles	27.00
No. 2 bundles	22.00
No. 3 bundles	18.00
Machine shop turn.	8.00
Shoveling turnings	10.00
Cast iron borings	10.00
Elec. furn. 1 ft. and under	28.00
No. 1 RR. hvy. melting	28.00
No. 1 cupola cast.	\$42.00 to 43.00

Seattle

No. 1 hvy. melting	\$27.00
No. 2 hvy. melting	23.00
No. 1 bundles	20.00
No. 2 bundles	17.00
No. 3 bundles	13.00
No. 1 cupola cast.	35.00
Mixed yard cast.	35.00

Hamilton, Ont.

No. 1 hvy. melting	\$26.00
No. 2 hvy. melting	23.00
No. 1 bundles	26.00
No. 2 bundles	22.00
No. 3 bundles	20.00
Bushelings	21.00
Bush., new fact prep'd.	24.00
Bush., new fact unprep'd.	20.00
Short steel turnings	12.00
Mixed bor. and turn.	12.00
Rails, rolling	35.00
Cast scrap	\$42.00 to 45.00



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	SEATTLE, WASH.	

Reynolds Leads Aluminum Hike

Catching other producers flat-footed, Reynolds Metals last week boosted aluminum prices 1¢ . . . Others almost sure to follow quickly—By R. L. Hatschek.

♦ ALUMINUM literally stole the top spot in the news this week with a price increase by one producer that caught the others flat-footed. Other potential headlines were: Agreement on the Toquepala, Peru, copper project's financing; copper miners strike in Northern Rhodesia; Chilean port strike; and healthy zinc picture outlined by the industry's year end statistical roundup.

ALUMINUM . . . In an almost totally unexpected move, Reynolds Metals Co. last week boosted pig and ingot prices 1¢ per lb (see p. 36). Action was triggered by the recent 0.75¢ per lb increase of Aluminum Co. of Canada, which was not effective in the U. S. There were other reasons justifying the move, but it was the immediate market situation that spurred it at this time.

Other producers are known to have considered an increase in the light of the Alcan hike and the recent acceleration of already rising U. S. export business (mainly to Italy and Germany). Don't forget either that the domestic market has firmed up considerably in recent months. But Aluminum Co. of America and Kaiser Aluminum & Chemical resisted the pressure, leaving it entirely up to Reynolds.

Industry members contacted by THE IRON AGE only 2 days before the Reynolds announcement (which came Friday) denied the possibility of an increase at this time—especially if Alcoa did not take the lead.

At presstime, it was a virtual certainty that Alcoa and Kaiser would follow the Reynolds lead. Only two questions remained: effective date (Jan. 10 for Reynolds) and how much mill products would be boosted.

Answer to the first is: Pretty quickly. Answer to the second: One cent plus a percentage depending on market conditions for the individual product.

COPPER . . . Labor trouble continues to plague the already hectic copper market in two widely separated areas. One is a strike of African workers in Northern Rhodesian mines. The other is a strike of Chilean dock workers.

The former seemed to be coming to an end with at least some of the miners returning to their jobs last week. But, while only two Chilean ports were originally tied up, that strike was scheduled to spread throughout the country this week but it was called off.

Both these and other factors were having their effect on the London Metal Exchange and the domestic secondary market—with prices first rising, then dropping back somewhat.

Other important copper news broke last week with the information that four firms were in agreement on the financing of the huge Toquepala, Peru, copper project. A new firm, Southern Peru Copper Corp., is being formed. Ownership will be American Smelting & Refining Co., 57.75 pct; Cerro de Pasco Corp., 16 pct; Phelps Dodge Corp., 16 pct; and Newmont Mining Corp., 10.25 pct. Ownership

includes properties previously held by AS & R, Cerro de Pasco and Newmont.

ZINC . . . Smelters topped a 10-year high by producing 85,166 tons of slab zinc in December to cap off a real comeback quarter. But while their monthly production topped anything since March 1944, the total of 868,247 tons for 1954 was the lowest annual output since 1948.

Yet despite this terrific December production figure and the slight decline (about 2000 tons) in shipments during the month, smelter stocks at the end of the year stood some 10,000 tons lower than at the beginning of the month—and nearly 85,000 tons lower than the peak in May. Top it off with an 1800-ton increase in unfilled orders and you have the picture of the zinc industry as it passed into an optimistic 1955.

Actual December figures and how they compare with November's are: Production, 85,166 tons (up 5047 tons); domestic shipments, 75,105 tons (down 1969 tons); export and drawback, 3405 tons (up 928 tons); to government account, 17,218 tons (down 848 tons); total shipments, 95,728 tons (down 1889 tons); stock at end of month, 124,077 tons (down 10,562 tons); and unfilled orders, 45,862 tons (up 1820 tons). Figures, of course, are those reported by the American Zinc Institute.

With demand holding at moderate to firm and with the government expected to come into the market shortly for January stockpiling commitments, the outlook for zinc continues fairly bright. If these trends continue, it's safe to say that the burdensome stock total will drop to five-digit figures before too long—and a price hike is a definite possibility.

LEAD . . . While the market for lead continues to move along at a steady pace, some members of the trade express the feeling that consumers are using more metal than they're buying. What this means, of course, is that they are still living off the shelf to some extent. It's certain that nobody is building up any significant inventory since producer stocks are ample and there's no outlook for a shortage.

But those consumer shelves are getting barer and lead consumption seems to be on the increase. This could easily mean an increase in purchasing. Also, General Services Administration is expected to issue its January stockpile requests in the very near future.

Daily Nonferrous Metal Prices

(Cents per lb except as noted)

	Jan. 5	Jan. 6	Jan. 7	Jan. 8	Jan. 10	Jan. 11
Copper, electro, Conn.	30.00	30.00	30.00	30.00	30.00	30.00
Copper, Lake, delivered	30.00	30.00	30.00	30.00	30.00	30.00
Tin, Straits, New York	86.25	85.75	86.25	....	86.00	86.00*
Zinc, East St. Louis	11.50	11.50	11.50	11.50	11.50	11.50
Lead, St. Louis	14.80	14.80	14.80	14.80	14.80	14.80

Note: Quotations are going prices

*Tentative

MILL PRODUCTS

(Cents per lb, unless otherwise noted)

Aluminum

(Base 30,000 lb, f.o.b. ship. pt., frt. allowed)

Alloy	Flat Sheet			Plate
	0.032 in.	0.081 in.	0.136 in.	0.250-3.000 in.
1100, 3003.....	38.1	36.1	34.9	34.5
3004.....	43.0	39.8	37.1	36.6
5052.....	45.7	40.9	39.2	38.3
2024-O, -OAL.....	48.4	39.8	38.3	38.4
7075-O, -OAL.....	59.8	48.1	45.8	45.8

Extruded Solid Shapes: Shape factors 1 to 6, 37.7¢ to 85.7¢; 12 to 14, 38.4¢ to 81.0¢; 24 to 26, 41.2¢ to 81.3¢; 36 to 38, 48.8¢ to 91.9¢.

Rod, Round: Rolled, 1.064-4.5 in. 1100-F, 42.6¢ to 83.1¢; cold finished, 0.375-3.499 in. 1100-F, 46.9¢ to 41.4¢.

Screw Machine Stock: Rounds, 2011-T3, 1/2-11/32 in., 62.5¢ to 49.1¢; 3/8-1 1/2 in., 48.9¢ to 46.9¢; 1 9/16-3 in., 44.7¢ to 41.7¢. Base 5000 lb.

Drawn Wire: Coiled, 0.051-0.374 in., 1100, 46.1¢ to 34.8¢; 5052, 55.7¢ to 43.4¢; 2017-T4, 63.3¢ to 43.7¢; 6061-T4, 58.5¢ to 43.1¢.

Extruded Tubing: Rounds, 6063-T5, OD 1/4-2 in., 43.4¢ to 63.9¢; 2-4 in., 39.3¢ to 53.6¢; 4-6 in., 39.5¢ to 48.8¢; 6-8 in., 40.4¢ to 51.1¢.

Reeling Sheet: Flat, per sheet, 0.032-1 in. 424% x 40-in., 32.91¢; x 56-in., 34.67¢; x 120-in., 35.841¢; x 144-in., 37.00¢. Coiled sheet, per lb, 0.019 in. x 28 in., 29.9¢.

Magnesium

(F.o.b. mill, freight allowed)

Sheet & Plate: F51-O 1/4 in., 64¢; 3/16 in., 67¢; 1/8 in., 69¢; 0.064 in., 73¢; 0.032 in., 94¢. Specification grade higher. Base 30,000 lb.

Extruded Round Rod: M, diam 1/4 to 0.311 in., 77¢; 1/2 to 3/4 in., 60.5¢; 1 1/4 to 1.749 in., 66¢; 2 to 5 in., 51.5¢. Other alloys higher. Base up to 1/2 in. diam, 10,000 lb; 1/2 to 2 in., 20,000 lb; 2 in. and larger, 30,000 lb.

Extruded Solid Shapes: Rectangles: M. In weight per ft for perimeters less than size indicated: 0.10 to 0.11 lb, 3.5 in., 65.5¢; 0.22 to 0.25 lb, 5.9 in., 62.3¢; 0.50 to 0.59 lb, 8.6 in., 59.7¢; 1.8 to 2.59 lb, 19.5 in., 56.8¢; 4 to 6 lb, 28 in., 52¢. Other alloys higher. Base, in weight per ft of shape: Up to 1/2 lb, 10,000 lb; 1/2 to 1.80 lb, 20,000 lb; 1.80 lb and heavier, 30,000 lb.

Extruded Round Tubing: M, 0.049 to 0.057 in. wall thickness: OD 1/4 to 5/16 in., 41.43¢; 5/16 to 3/4 in., 41.29¢; 3/4 to 1 in., 94¢; 1 to 2 in., 79¢; 0.166 to 0.219 in. wall: OD, 3/4 to 3 in., 64¢; 1 to 2 in., 60¢; 3 to 4 in., 59¢. Other alloys higher. Base, OD: Up to 1 1/4 in., 10,000 lb; 1 1/4 to 3 in., 20,000 lb; over 3 in., 30,000 lb.

Titanium

(10,000 lb base, f.o.b. mill)

Commercially pure and alloy grades: Sheets and strip, HR or CR, 81¢; Plate, HR, 81¢; Wire, rolled and/or drawn, 81¢; Bar, HR or forged, 89¢; Forgings, 89¢.

Nickel, Monel, Inconel

(Base prices, f.o.b. mill)

	"A" Nickel Monel	Inconel
Sheet, CR.....	102	78
Strip, CR.....	102	87
Rod, Bar, HR.....	87	69
Angles, HR.....	87	69
Plate, HR.....	97	82
Seamless Tube.....	122	108
Shot, Blocks.....	65	...

Copper, Brass, Bronze

(Freight included on 500 lb)

	Sheet	Rods	Extruded Shapes
Copper.....	46.79	46.11	48.86
Copper, h-r.....	48.76	46.11	...
Copper, drawn.....	...	46.36	...
Low brass.....	44.95	44.39	...
Yellow brass.....	42.27	42.21	...
Red brass.....	45.89	45.83	...
Naval brass.....	46.39	46.70	41.96
Leaded brass.....	...	...	39.73
Comm. bronze.....	47.38	47.32	...
Mang. bronze.....	50.11	44.25	45.81
Phos. bronze.....	67.31	67.81	...
Muntz metal.....	44.54	40.35	41.60
Ni silver, 10 pct 55.30	...	...	63.80
Beryllium copper, CR, 1.9% Be, Base	...	...	...
2600 lb, f.o.b.	...	...	...
Strip.....	...	...	\$1.63
Rod, bar, wire.....	...	...	1.65

PRIMARY METALS

(Cents per lb, unless otherwise noted)

Aluminum ingot, 99+%, 10,000 lb, freight allowed.....	22.20 to 23.20
Aluminum pig.....	20.50 to 21.50
Antimony, American, Laredo, Tex.....	28.50
Beryllium copper, per lb cont'd be.....	\$40.00
Beryllium aluminum 5% Be, Dollars per lb contained Be.....	\$73.75
Bismuth, ton lots.....	\$2.25
Cadmium, del'd.....	\$1.70
Cobalt, 97-99% (per lb).....	\$2.60 to \$2.67
Copper, electro, Conn. Valley.....	30.00
Copper, Lake, delivered.....	30.00
Gold, U. S. Treas., per troy oz.....	\$35.00
Indium, 99.8%, dollars per troy oz.....	\$2.25
Iridium, dollars per troy oz.....	\$130 to \$135
Lead, St. Louis.....	14.80
Lead, New York.....	15.00
Magnesium, 99.8+%, f.o.b. Freeport, Tex., 10,000 lb, pig.....	27.00
Ingot.....	27.75
Magnesium, sticks, 100 to 500 lb, 46.00 to 48.00	...
Mercury, dollars per 76-lb flask, f.o.b. New York.....	\$322 to \$324
Nickel electro, f.o.b. N. Y. warehouse.....	67.67
Nickel oxide sinter, at Copper Cliff, Ont., contained nickel.....	60.75
Palladium, dollars per troy oz.....	\$17 to \$21
Platinum, dollars per troy oz.....	\$79 to \$84
Silver, New York, cents per troy oz.....	85.25
Tin, New York.....	85.875
Titanium, sponge, grade A-1.....	\$4.60
Zinc, East St. Louis.....	11.50
Zinc, New York.....	12.00
Zirconium copper, 50 pct.....	\$6.20

REMELTED METALS**Brass Ingot**

(Cents per lb delivered, carloads)

85-5-5-5 ingot.....	30.00
No. 115.....	29.50
No. 120.....	29.50
No. 123.....	29.00
80-10-10 ingot.....	34.00
No. 305.....	31.75
No. 315.....	34.00
88-10-2 ingot.....	42.75
No. 210.....	39.25
No. 215.....	34.75
No. 245.....	34.75
Yellow ingot.....	25.75
No. 405.....	25.75
Manganese bronze.....	27.75
No. 421.....	27.75

Aluminum Ingot

(Cents per lb del'd 30,000 lb and over)

95-5 aluminum-silicon alloys.....	24.00-24.75
0.30 copper, max.....	23.75-24.50
0.60 copper, max.....	22.00-23.50
Piston alloys (No. 122 type).....	21.50-22.00
No. 12 alum. (No. 2 grade).....	22.25-23.00
103 alloy.....	23.25-24.25
195 alloy.....	23.25-24.25
123 alloy (0.60 copper max.).....	22.25-23.00
ASX-679.....	22.25-23.00

Steel deoxidizing aluminum, notch-bar granulated or shot

Grade 1—84-97 1/4%.....	22.75-23.50
Grade 2—92-96%.....	22.00-22.75
Grade 3—90-92%.....	21.00-21.75
Grade 4—85-90%.....	19.75-21.00

ELECTROPLATING SUPPLIES**Anodes**

(Cents per lb, freight allowed, 5000 lb lots)

Copper.....	44.92
Cast, oval, 15 in. or longer.....	39.75
Electrodeposited.....	45.42
Flat rolled.....	45.42
Brass, 80-20.....	43.515
Cast, oval, 15 in. or longer.....	20.25
Zinc, flat cast.....	18.50
Ball, anodes.....	88.50
Nickel, 99 pct plus.....	\$1.70
Cast.....	...
Cadmium.....	...
Silver 999 fine, rolled, 100 oz. lots per troy oz., f.o.b. Bridgeport, Conn.....	94 1/2

Chemicals

(Cents per lb, f.o.b. shipping points)

Copper cyanide, 100 lb drum.....	63.00
Copper sulphate, 99.5 crystals, bbl.....	12.85
Nickel salts, single or double, 4-100 lb bags, frt. allowed.....	30.00
Nickel chloride, 375 lb drum.....	38.00
Silver cyanide, 100 oz. lots, per oz.....	75 1/2
Sodium cyanide, 96 pct domestic.....	19.25
200 lb drums.....	54.20
Zinc cyanide, 100 lb drum.....	54.20

SCRAP METALS**Brass Mill Scrap**

(Cents per pound, add 1¢ per lb for shipments of 30,000 lb and over)

	Heavy	Turnings
Copper.....	26	25 1/4
Yellow brass.....	19 1/2	18 1/4
Red brass.....	23	22 1/4
Comm. bronze.....	23 1/2	23 1/4
Mang. bronze.....	18 1/2	17 1/4
Yellow brass rod ends.....	19 1/2	...

Custom Smelters' Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire.....	30
No. 2 copper wire.....	28 1/2
Light copper.....	27
*Refinery brass.....	26 1/2
*Dry copper content.....	...

Ingot Makers' Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire.....	29
No. 2 copper wire.....	27 1/2
Light copper.....	26
No. 1 composition.....	23 1/2-24 1/4
No. 1 comp. turnings.....	23 1/2-24 1/4
Rolls brass.....	18 1/2-19
Brass pipe.....	19-19 1/2
Radiators.....	19 1/2-20

Aluminum

Mixed old cast.....	14 1/2-15
Mixed new clips.....	15 1/2-16 1/2
Mixed turnings, dry.....	15-16
Pots and pans.....	14 1/2-15

Dealers' Scrap

(Dealers' buying price, f.o.b. New York in cents per pound)

Copper and Brass	
No. 1 heavy copper and wire.....	26 1/2-27
No. 2 heavy copper and wire.....	25-25 1/2
Light copper.....	23-23 1/2
New type shell cuttings.....	23-23 1/2
Auto radiators (unsweated).....	21-21 1/2
No. 1 composition.....	20 1/2-21
Unlined red car boxes.....	18
Cocks and faucets.....	18
Mixed heavy yellow brass.....	14 1/2
Old rolled brass.....	17
Brass pipe.....	18
New soft brass clippings.....	17
Brass rod ends.....	17
No. 1 brass rod turnings.....	16

Aluminum

Alum. pistons and struts.....	8 1/2-9 1/2
Aluminum crankcases.....	11-12
1100 (28) aluminum clippings.....	14 1/2-15 1/2
Old sheet and utensils.....	11-12
Borings and turnings.....	7 1/2-8 1/2
Misc. cast aluminum.....	11-12
2024 (248) clippings.....	12 1/2-13 1/2

Zinc

New zinc clippings.....	7
Old zinc.....	5 1/2
Zinc routings.....	3 1/2-4 1/2
Old die cast scrap.....	3 1/2-4 1/2

Nickel and Monel

Pure nickel clippings.....	57
Clean nickel turnings.....	40
Nickel anodes.....	67
Nickel rod ends.....	57
New Monel clippings.....	26
Clean Monel turnings.....	21
Old sheet Monel.....	26
Nickel silver clippings, mixed.....	16 1/2
Nickel silver turnings, mixed.....	13 1/2

Lead

Soft scrap lead.....	12-12 1/2
Battery plates (dry).....	6 1/4-6 3/4
Batteries, acid free.....	4.35-4.60

Magnesium

Segregated solids.....	18 1/2-19
Castings.....	17 1/2-18

Miscellaneous

Block tin.....	70-75
No. 1 pewter.....	50-55
No. 1 auto babbitt.....	45
Mixed common babbitt.....	12-12 1/2
Solder joints.....	17
Siphon tops.....	45
Small foundry type.....	16 1/2-16 3/4
Monotype.....	15-16 1/4
Lino. and stereotypes.....	14 1/2-15 1/4
Electrotype.....	12 1/2-12 3/4
Hand picked type shells.....	10 1/2-10 3/4
Lino. and stereo. dross.....	6 1/2
Electro dross.....	6

IRON AGE

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

STEEL
PRICES

(Effective
Jan. 11, 1955)

	BILLETS, BLOOMS, SLABS			PIL- ING	SHAPES STRUCTURALS			STRIP					
	Carbon Rolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton		Carbon	Hi Str. Low Alloy	Carbon Wide- Flange	Hot- rolled	Cold- rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy	Alloy Hot- rolled	Alloy Cold- rolled
EAST	Bethlehem, Pa.		\$96.00 B3		4.30 B3	6.45 B3	4.30 B3						
	Buffalo, N. Y.	\$64.00 B3	\$78.00 B3, R3	\$86.00 B3, R3	5.075 B3	4.30 B3	6.45 B3	4.30 B3	4.95 B3,R3	5.75 B3,R3	6.15 B3	6.425 B3	
	Claymont, Del.												
	Coatesville, Pa.												
	Conshohocken, Pa.							4.10 A2	5.80 A2	6.15 A2			
	New Bedford, Mass.								6.30 B6				
	Johnstown, Pa.	\$64.00 B3	\$78.00 B3	\$86.00 B3		4.30 B3	6.45 B3	4.95 B3					
	Fairless, Pa.												
	New Haven, Conn.								6.30 D1 6.50 A5				
	Phoenixville, Pa.				3.95 P2		3.95 P2						
	Sparrows Pt., Md.							4.95 B3	5.75 B3	6.15 B3	6.425 B3		
	Wallingford, Conn.								6.30 W1				
MIDDLE WEST	Fewtucket, R. I. Worcester, Mass.								6.30 W7 6.90 A5				12.75 A5 12.90 W7
	Alton, Ill.							4.225 L1					
	Ashland, Ky.							4.95 A7					
	Canton-Massillon, Dover, Ohio		\$80.00 R3	\$86.00 R3, T3									12.45 G4
	Chicago, Ill.	\$64.00 U1	\$78.00 R3, U1,W8	\$86.00 U1, W8,R3	5.075 U1	4.25 U1, W8	6.40 U1, Y1	4.25 U1	4.95 A1,N4 W8	5.85 A1			
	Cleveland, Ohio									5.75 A5,J3	6.00 A5		12.45 A5
	Detroit, Mich.		\$86.00 R5						4.15 G3,M2	5.85 D1,D2, G3,M2,P11	6.25 G3	6.70 D2, G3	
	Duluth, Minn.												
	Gary, Ind. Harbor, Indiana	\$64.00 U1	\$78.00 U1	\$86.00 U1, Y1	5.075 Y3	4.25 Y3, U1	6.40 U1, Y3	4.95 Y3, U1,Y1	6.95 Y3	6.15 U1, Y3,Y1	6.60 Y1	6.70 U1, Y1	
	Starling, Ill.							4.15 N4					
	Indianapolis, Ind.								5.90 C5				
	Newport, Ky.											6.70 Y5	
WEST	Middletown, Ohio									5.75 A7			
	Niles, Warren, Ohio Sharon, Pa.							4.95 S1,R3	5.75 S1,R3, T4	6.15 S1, R3	6.60 S1, R3	6.70 S1	12.45 S1
	Pittsburgh, Pa. Midland, Pa. Butler, Pa.	\$64.00 U1, J3	\$78.00 J3, U1,C11	\$86.00 U1, C11	5.075 U1	4.25 J3, U1	6.40 J3, U1	4.25 U1	4.95 S7,P6	5.75 B4,J3, S7		6.70 S9	12.45 S9
	Portsmouth, Ohio							4.95 P7	5.75 P7				
	Wairton, Wheeling, Follansbee, W. Va.					4.25 W3		4.95 W3	5.75 F3,W3	6.15 W3	6.60 W3		
	Youngstown, Ohio		\$78.00 C10	\$86.00 Y1, C10		4.25 Y1	6.40 Y1	4.95 U1,Y1	5.75 Y1,C5	6.15 U1, Y1	6.60 Y1	6.70 U1, Y1	12.45 C5
	Fontana, Cal.	\$72.00 K1	\$86.00 K1	\$105.00 K1		4.90 K1	7.95 K1	5.25 K1	4.825 K1	7.45 K1	7.25 K1	9.10 K1	14.55 K1
	Geneva, Utah		\$78.00 C7			4.25 C7	6.40 C7						
	Kansas City, Mo.					4.30 S2	6.45 S2	4.30 S2			6.60 S2	6.95 S2	
	Los Angeles, Torrance, Cal.		\$87.50 B2	\$106.00 B2		4.95 B2, C7	7.10 B2	4.90 B2,C7	7.80 C1				
	Minneapolis, Colo.					4.70 C6		5.15 C6					
	Portland, Ore.					5.00 O2							
SOUTH	San Francisco, Niles, Pittsburg, Cal.		\$87.50 B2			4.90 B2 4.95 P9	7.05 B2	4.90 B2,C7					
	Seattle, Wash.		\$91.50 B2			5.00 B2	7.15 B2	5.95 B2, P12					
	Atlanta, Ga.							4.25 A8					
	Fairfield, Ala. City, Birmingham, Ala.	\$64.00 T3	\$78.00 T3			4.25 C16, R3,T2	6.40 T2	4.95 R3, T2,C16		6.15 T2			
	Houston, Tex.		\$81.00 S2	\$91.00 S2		4.30 S2	6.45 S2	4.30 S2		6.40 S2		6.95 S2	

IRON AGE		States identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.												
STEEL PRICES		SHEETS									WIRE ROD	TINPLATE†		BLACK PLATE
(Effective Jan. 11, 1955)		Hot-rolled 18 ga. & heavy.	Cold-rolled	Galvanized 18 ga.	Enameling 12 ga.	Long Tens 10 ga.	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.	Hot-rolled 19 ga.		Cokes* 1.25-lb. base box	Electro* 0.25-lb. base box	Holloware Enameling 29 ga.
EAST	Bethlehem, Pa.													
	Buffalo, N. Y.	4.05 B3	4.95 B3				6.10 B3	7.50 B3			4.675 W6	† Special coated mfg. turns deduct 95¢ from 1.25-lb. coke base box price. Can-making quality blackplate 55 to 125 lb. deduct \$2.20 from 1.25-lb. coke base box. * COKES: 1.50-lb. add 25¢. ELECTRO: 0.50-lb. add 25¢; 0.75-lb. add 65¢; 1.00-lb. add \$1.10. Differential 1.00 lb./0.25 lb. add 85¢.		
	Claymont, Del.													
	Castroville, Pa.													
	Conshohocken, Pa.	4.10 A2	5.00 A2				6.15 A2							
	Harrisburg, Pa.													
	Hartford, Conn.													
	Johnstown, Pa.									4.675 B3				
	Fairless, Pa.	4.10 U1	5.00 U1				6.15 U1	7.55 U1			\$8.90 U1	\$7.60 U1		
	New Haven, Conn.													
	Phoenixville, Pa.													
Sparrows Pt., Md.	4.05 B3	4.95 B3	5.45 B3			6.10 B3	7.50 B3	8.20 B3		4.775 B3	\$8.90 B3	\$7.60 B3		
Worcester, Mass.										4.975 A5				
Trenton, N. J.														
MIDDLE WEST	Alton, Ill.										4.85 L1			
	Ashland, Ky.	4.05 A7		5.45 A7	5.375 A7									
	Canton-Massillon, Dover, Ohio			5.45 R1, R3						5.175 R1				
	Chicago, Joliet, Ill.	4.05 A1, W8					6.10 U1				4.675 A5, N4, R3			
	Sterling, Ill.										4.775 N4			
	Cleveland, Ohio	4.05 J3, R3	4.95 J3, R3		5.375 R3		6.10 J3, R3	7.50 J3, R3			4.675 A5			
	Detroit, Mich.	4.15 G3, M2	5.05 G3				6.20 G3	7.60 G3						
	Newport, Ky.	4.05 N3		5.45 N3										
	Gary, Ind. Harbor, Indiana	4.05 J3, U1, Y1	4.95 J3, U1, Y1	5.45 U1, J3	5.375 J3, U1	5.85 U1	6.10 U1, J3, Y1	7.50 U1, Y1			4.675 Y1	\$8.90 J3, U1, Y1	\$7.50 J3, U1, Y1	6.20 U1, Y1
	Granite City, Ill.	4.25 G2	5.15 G2	5.65 G2	5.575 G2								\$7.60 G2	6.30 G2
	Kokomo, Ind.	4.15 C9		5.55 C9						5.20 C9	4.775 C9			
WEST	Mansfield, Ohio					5.85 E2				5.175 E2				
	Middletown, Ohio		4.95 A7		5.375 A7	5.85 A7								
	Niles, Ohio Sharon, Pa.	4.05 S1, R3 5.30 N3	4.95 R3 5.975 N3	5.45 N3	6.725 N3	5.85 N3	6.10 S1, R3	7.50 R3				\$8.90 R3	\$7.50 R3	
	Pittsburgh, Pa. Midland, Pa. Butler, Pa.	4.05 J3, U1, P6	4.95 J3, U1, P6	5.45 U1	5.375 U1		6.10 J3, U1	7.50 J3, U1	8.20 U1		4.675 A5 4.875 P6	\$8.90 J3, U1	\$7.50 J3, U1	6.20 U1
	Portsmouth, Ohio	4.05 P7	4.95 P7								4.675 P7			
	Weirton, Wheeling, Follensbee, W. Va.	4.05 W3, W5	4.95 W3, W5, F3	5.45 W3 W5		5.85 W3, W5	6.10 W3	7.50 W3				\$8.90 W3, W5	\$7.50 W3, W5	6.20 F3, W5
	Youngstown, Ohio	4.05 U1, Y1	4.95 Y1		5.375 Y1		6.10 U1, Y1	7.50 Y1			4.675 Y1			
	Fontana, Cal.	4.825 K1	6.05 K1				6.875 K1	8.55 K1			5.475 K1			
	Geneva, Utah	4.15 C7												
	Kansas City, Mo.										4.925 S2			
	SOUTH	Los Angeles Torrance, Cal.										5.475 C7, B2		
Minneapolis, Colo.											4.925 C6			
San Francisco, Niles, Pittsburg, Cal.		4.75 C7	5.90 C7	6.20 C7							5.325 C7	\$9.50 C7	\$8.25 C7	
Seattle, Wash.														
Atlanta, Ga.														
Fairfield, Ala. Alabama City, Ala.		4.05 R3, T2	4.95 T2	5.45 R3, T2			6.10 T2			5.35 R3	4.675 T2, R3	\$8.90 T2	\$7.60 T2	
Houston, Texas											4.925 S2			

IRON AGE		Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.										
STEEL PRICES		BARS						PLATES				WIRE
(Effective Jan. 11, 1955)		Carbon Steel	Reinforcing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Flat Plate	Alloy	Hi Str. Low Alloy	Mil's. Bright
EAST	Bethlehem, Pa.				5.075 B3	6.625 B3	6.45 B3					
	Buffalo, N. Y.	4.30 B3,R3	4.30 B3,R3	5.45 B5	5.075 B3,R3	6.625 B3,B5	6.45 B3	4.225 B3,R3			6.45 B3	5.75 W6
	Claymont, Del.							4.225 C4		5.80 C4		
	Coatesville, Pa.							4.225 L4		5.80 L4		
	Consabrooken, Pa.							4.225 A2	5.275 A2		6.45 A2	
	Harrisburg, Pa.							3.975 C3	5.275 C3			
	Hartford, Conn.			5.90 R3		6.925 R3						
	Johantown, Pa.	4.30 B3	4.30 B3		5.075 B3		6.45 B3	4.225 B3		5.80 B3	6.45 B3	5.75 B3
	Fairless, Pa.	4.45 U1	4.45 U1		5.225 U1							
	Newark, N. J.			5.85 W10		6.80 W10						
	Camden, N. J.			5.85 P10								
	Putnam, Conn.			5.95 W10								
	Sparrows Pt., Md.		4.30 B3					4.225 B3		5.80 B3	6.45 B3	5.85 B3
MIDDLE WEST	Palmer, Worcester, Randolph, Mansfield, Mass.			5.85 W11 5.95 B5,C14		6.925 A5,B5						6.85 A5, W6
	Alton, Ill.	4.50 L1										5.925 L1
	Ashland, Newport, Ky.							4.225 A7,N5		5.80 N5		
	Canton-Massillon, Mansfield, Ohio	4.40 R3		5.40 R2,R3	5.075 R3,T5	6.625 R2,R3, T5		4.225 E2				
	Chicago, Joliet, Ill.	4.30 U1, N4,W8,R3	4.30 N4,R3	5.40 A5,W10, W8,B5,L3	5.075 U1,R3, W8	6.625 A5,W8, W10,L3,B5		4.225 U1,W8, I3,A1,R3	5.275 U1	5.80 U1	6.45 U1	5.75 A5, R3,N4,W7
	Cleveland, Ohio	4.30 R3	4.30 R3	5.40 A5,C13		6.625 A5 6.865 C13	6.45 R3	4.225 J3,R3	5.275 J3		6.45 J3,R3	5.75 A5, C13
	Detroit, Mich.	4.40 G3 4.45 R5		5.40 R5 5.60 B5,P8 5.85 P3	5.075 R5 5.175 G3	6.625 R5 6.825 B5,P3, P8	6.55 G3	4.325 G3			6.55 G3	
	Duluth, Minn.											5.75 A5
	Gary, Ind. Harbor, Crawfordsville	4.30 J3, U1, Y1	4.30 J3, U1, Y1	5.40 M5,R3	5.075 J3, U1, Y1	6.625 M5 6.825 R3	6.45 U1,J3, Y1	4.225 J3, U1, Y1	5.275 J3	5.80 U1, Y1	6.45 U1,J3, Y1	5.85 M4
	Granite City, Ill.							4.425 G2				
	Kokomo, Ind.											5.85 C9
	Sterling, Ill.	4.40 N4	4.40 N4									5.85 N4
	Niles, Ohio Sharon, Pa.	4.30 R3					6.45 R3	4.225 S1,R3		5.80 S1	6.45 S1	
WEST	Pittsburgh, Pa. Midland, Pa.	4.30 J3, U1, C11	4.30 J3, U1	5.40 A5,C8, C11,J3, W10,B4,R3	5.075 U1,C11	6.625 A5,C11, W10,C8,R3	6.45 J3, U1	4.225 J3, U1	5.275 U1	5.80 U1	6.45 J3, U1	5.75 A5,J3, P6
	Portsmouth, Ohio											5.75 P7
	Weirton, Wheeling, Follensbee, W. Va.	4.30 W3						4.225 W3, W5				
	Youngstown, Ohio	4.30 U1, Y1, C10,R3	4.30 U1, Y1, R3	5.40 F2,Y1, C10	5.075 U1, Y1, C10	6.625 Y1,C10 6.865 F2	6.45 U1, Y1	4.225 U1, Y1, R3		5.80 Y1	6.45 Y1	5.75 Y1
	Emeryville, Cal.	5.05 J5	5.05 J5									
	Fontana, Cal.	5.00 K1	5.00 K1		6.125 K1		7.70 K1	4.875 K1		6.45 K1	7.15 K1	
	Genoa, Utah							4.225 C7			6.45 C7	
	Kanasa City, Mo.	4.55 S2	4.55 S2		5.325 S2		6.70 S2					6.00 S2
	Los Angeles, Torrance, Cal.	5.00 B2,C7	5.00 B2,C7	6.85 R3	6.125 B2		7.15 B2					6.70 B2
	Minnequa, Colo.	4.75 C6	4.75 C6					5.075 C6				6.00 C6
	Portland, Ore.	5.05 O2	5.05 O2									
	San Francisco, Niles, Pittsburg, Cal.	5.00 C7,P9 5.05 B2	5.00 C7,P9 5.05 B2				7.20 B2					6.70 C7
	Seattle, Wash.	5.05 B2,P12, N6	5.05 B2,P12				7.20 B2	5.125 B2		6.70 B2	7.35 B2	
SOUTH	Atlanta, Ga.	4.50 A8	4.50 A8									5.95 A8
	Fairfield, Ala. City, Birmingham, Ala.	4.30 T2,C16, R3	4.30 T2,C16, R3				6.45 T2	4.225 T2,R3			6.45 T2	5.75 R3, T2
	Houston, Ft. Worth, Lone Star, Tex.	4.55 S2	4.55 S2		5.325 S2		6.70 S2	4.85 L3 4.275 S2		5.85 S2	6.50 S2	6.00 S2

Key to Steel Producers

With Principal Offices

- A1 Acme Steel Co., Chicago
A2 Alan Wood Steel Co., Conshohocken, Pa.
A3 Allegheny Ludlum Steel Corp., Pittsburgh
A4 American Cladmetals Co., Carnegie, Pa.
A5 American Steel & Wire Div., Cleveland
A6 Angell Nail & Chaplet Co., Cleveland
A7 Armco Steel Corp., Middletown, O.
A8 Atlantic Steel Co., Atlanta, Ga.

B1 Babcock & Wilcox Tube Div., Beaver Falls, Pa.
B2 Bethlehem Pacific Coast Steel Corp., San Francisco
B3 Bethlehem Steel Co., Bethlehem, Pa.
B4 Blair Strip Steel Co., New Castle, Pa.
B5 Bliss & Laughlin, Inc., Harvey, Ill.

C1 Calstrip Steel Corp., Los Angeles
C2 Carpenter Steel Co., Reading, Pa.
C3 Central Iron & Steel Co., Harrisburg, Pa.
C4 Claymont Products Dept., Claymont, Del.
C5 Cold Metal Products Co., Youngstown, O.
C6 Colorado Fuel & Iron Corp., Denver
C7 Columbia Geneva Steel Div., San Francisco
C8 Columbia Steel & Shafting Co., Pittsburgh
C9 Continental Steel Corp., Kokomo, Ind.
C10 Copperweld Steel Co., Pittsburgh, Pa.
C11 Crucible Steel Co. of America, New York
C12 Cumberland Steel Co., Cumberland, Md.
C13 Cuyahoga Steel & Wire Co., Cleveland
C14 Compressed Steel Shafting Co., Readville, Mass.
C15 G. O. Carlson, Inc., Thorndale, Pa.
C16 Connors Steel Div., Birmingham

D1 Detroit Steel Corp., Detroit
D2 Detroit Tube & Steel Div., Detroit
D3 Driver Harris Co., Harrison, N. J.
D4 Dickson Weatherproof Nail Co., Evanston, Ill.

E1 Eastern Stainless Steel Corp., Baltimore
E2 Empire Steel Co., Mansfield, O.

F1 Firth Sterling, Inc., McKeesport, Pa.
F2 Fitzsimmons Steel Corp., Youngstown
F3 Follansbee Steel Corp., Follansbee, W. Va.

G1 Globe Iron Co., Jackson, O.

- G2 Granite City Steel Co., Granite City, Ill.
G3 Great Lakes Steel Corp., Detroit
G4 Greer Steel Co., Dover, O.

H1 Hanna Furnace Corp., Detroit

I2 Ingersoll Steel Div., Chicago
I3 Inland Steel Co., Chicago
I4 Interlake Iron Corp., Cleveland

J1 Jackson Iron & Steel Co., Jackson, O.
J2 Jessop Steel Corp., Washington, Pa.
J3 Jones & Laughlin Steel Corp., Pittsburgh
J4 Joslyn Mfg. & Supply Co., Chicago
J5 Judson Steel Corp., Emeryville, Calif.

K1 Kaiser Steel Corp., Fontana, Cal.
K2 Keystone Steel & Wire Co., Pueria
K3 Koppers Co., Granite City, Ill.

L1 Laclede Steel Co., St. Louis
L2 La Salle Steel Co., Chicago
L3 Lone Star Steel Co., Dallas
L4 Lukens Steel Co., Coatesville, Pa.

M1 Mahoning Valley Steel Co., Niles, O.
M2 McLouth Steel Corp., Detroit
M3 Mercer Tube & Mfg. Co., Sharon, Pa.
M4 Mid-States Steel & Wire Co., Crawfordsville, Ind.
M5 Monarch Steel Co., Inc., Hammond, Ind.
M6 Mystic Iron Works, Everett, Mass.

N1 National Supply Co., Pittsburgh
N2 National Tube Div., Pittsburgh
N3 Niles Rolling Mill Div., Niles, O.
N4 Northwestern Steel & Wire Co., Sterling, Ill.
N5 Newport Steel Corp., Newport, Ky.
N6 Northwest Steel Rolling Mills, Seattle
N7 Newman Crosby Steel Co., Pawtucket, R. I.

O1 Oliver Iron & Steel Co., Pittsburgh
O2 Oregon Steel Mills, Portland

P1 Page Steel & Wire Div., Monaca, Pa.
P2 Phoenix Iron & Steel Co., Phoenixville, Pa.
P3 Pilgrim Drawn Steel Div., Plymouth, Mich.
P4 Pittsburgh Coke & Chemical Co., Pittsburgh
P5 Pittsburgh Screw & Bolt Co., Pittsburgh
P6 Pittsburgh Steel Co., Pittsburgh
P7 Portsmouth Div., Detroit Steel Corp., Detroit

- P8 Plymouth Steel Co., Detroit
P9 Pacific States Steel Co., Niles, Cal.
P10 Precision Drawn Steel Co., Camden, N. J.
P11 Production Steel Strip Corp., Detroit
P12 Pacific Steel Rolling Mills, Seattle

R1 Renner Steel & Mfg. Co., Dover, O.
R2 Reliance Div., Eaton Mfg. Co., Massillon, O.
R3 Republic Steel Corp., Cleveland
R4 Roebbing Sons Co., John A., Trenton, N. J.
R5 Rotary Electric Steel Co., Detroit
R6 Rodney Metals, Inc., New Bedford, Mass.
R7 Rome Strip Steel Co., Rome, N. Y.

S1 Sharon Steel Corp., Sharon, Pa.
S2 Sheffield Steel Corp., Kansas City
S3 Shenango Furnace Co., Pittsburgh
S4 Simonds Saw & Steel Co., Fitchburg, Mass.
S5 Sweet's Steel Co., Williamsport, Pa.
S6 Standard Forging Corp., Chicago
S7 Stanley Works, New Britain, Conn.
S8 Superior Drawn Steel Co., Monaca, Pa.
S9 Superior Steel Corp., Carnegie, Pa.

T1 T Tonawanda Iron Div., N. Tonawanda, N. Y.
T2 Tennessee Coal & Iron Div., Fairfield
T3 Tennessee Products & Chem. Corp., Nashville
T4 Thomas Strip Div., Warren, O.
T5 Timken Steel & Tube Div., Canton, O.
T6 Tremont Nail Co., Wareham, Mass.
T7 Texas Steel Co., Fort Worth

U1 United States Steel Corp., Pittsburgh
U2 Universal-Cyclops Steel Corp., Bridgeville, Pa.
U3 Ulbrich Stainless Steels, Wallingford, Conn.
U4 U. S. Pipe & Foundry Co., Birmingham

W1 Wallingford Steel Co., Wallingford, Conn.
W2 Washington Steel Corp., Washington, Pa.
W3 Weirton Steel Co., Weirton, W. Va.
W4 Wheeland Tube Co., Wheeland, Pa.
W5 Wheeling Steel Corp., Wheeling, W. Va.
W6 Wickwire Spencer Steel Div., Buffalo
W7 Wilson Steel & Wire Co., Chicago
W8 Wisconsin Steel Co., S. Chicago, Ill.
W9 Woodward Iron Co., Woodward, Ala.
W10 Wyckoff Steel Co., Pittsburgh
W11 Worcester Pressed Steel Co., Worcester, Mass.

Y1 Youngstown Sheet & Tube Co., Youngstown

PIPE AND TUBING

Base discounts (per) l.e.b. mills. Base price about \$200 per net ton.

	BUTTWELD												SEAMLESS											
	1/2 In.		3/4 In.		1 In.		1 1/4 In.		1 1/2 In.		2 In.		2 1/2 In.		3 In.		3 1/2 In.		4 In.		4 1/2 In.		5 In.	
	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.
STANDARD T. & C.																								
Sparrows Pt. B3	21.75	6.5	24.75	10.5	27.25	14.0	29.75	14.75	30.25	15.75	30.75	16.25	32.25	16.0										
Youngstown R3	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0										
Fontana K1	19.75	W4.5	13.75	W9.5	16.25	3.0	18.75	3.75	19.25	4.75	19.75	5.25	21.25	5.0										
Pittsburgh J3	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0										
Alton, Ill. L1	21.75	6.5	24.75	10.5	27.25	14.0	29.75	14.75	30.25	15.75	30.75	16.25	32.25	16.0										
Sharon M3	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0										
Fairless N2	21.75	6.5	24.75	10.5	27.25	14.0	29.75	14.75	30.25	15.75	30.75	16.25	32.25	16.0										
Pittsburgh N1	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0										
Wheeling W5	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0										
Wheeland W4	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0										
Youngstown Y1	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0										
Indiana Harbor Y1	22.75	7.5	25.75	11.5	28.25	15.0	30.75	15.75	31.25	16.75	31.75	17.25	33.25	17.0										
Lorain N2	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0										
EXTRA STRONG PLAIN ENDS																								
Sparrows Pt. B3	25.25	11.5	29.25	15.5	31.25	19.0	31.75	17.75	32.25	18.75	32.75	19.25	33.25	18.0										
Youngstown R3	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.25	35.25	20.0										
Fairless N2	25.25	11.5	29.25	15.5	31.25	19.0	31.75	17.75	32.25	18.75	32.75	19.25	33.25	18.0										
Fontana K1	14.25		18.25		20.25		20.75		21.25		21.75		22.25											
Pittsburgh J3	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.25	35.25	20.0										
Alton, Ill. L1	25.25	11.5	29.25	15.5	31.25	19.0	31.75	17.75	32.25	18.75	32.75	19.25	33.25	18.0										
Sharon M3	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.25	35.25	20.0										
Pittsburgh N1	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.25	35.25	20.0										
Wheeling W5	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.25	35.25	20.0										
Wheeland W4	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.25	35.25	20.0										
Youngstown Y1	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.25	35.25	20.0										
Indiana Harbor Y1	26.25	12.5	30.25	16.5	32.25	20.0	32.75	18.75	33.25	19.75	33.75	20.75	34.25	19.0										
Lorain N2	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.25	35.25	20.0										

Threads only, butt weld and seamless 2 1/4 pt. higher discount. Plain ends, butt weld and seamless, 3-in. and under, 4 1/2 pt. higher discount. Butt weld jobbers discount, 5 pct.
Galvanized discounts based on zinc price range of over 9¢ to 11¢ incl. per lb., East St. Louis. For each 2¢ change in zinc, discounts vary as follows: 1/2, 3/4 and 1-in., 2 pt.; 1 1/2, 1 3/4 and 2-in., 1 1/2 pt.; 2 1/2 and 3-in., 1 pt. e.g., zinc price range of over 11¢ to 13¢ would lower discounts; zinc price in range of over 9¢ to 9¢ would increase discounts. East St. Louis zinc price now 11.50¢ per lb.

Steel Prices

(Effective Jan. 11, 1955)

To identify producers, see Key on preceding page.

RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb.	No. 1 Std. Rail	Light Rail	Joint Bars	Track Spikes	Screw Spikes	Tie Plates	Track Bolts Treated
Bessemer U/I	4.45	5.35	5.425				
So. Chicago R3			7.30				
Enslay T7	4.45	5.35					
Fairfield T7	4.45	5.35	7.30		5.275		
Gary U/I	4.45	5.35			5.275		
Ind. Harbor J1	4.45	5.35	5.425	7.30			
Johnstown B3		5.35					
Juliet U/I	5.35	5.425					
Kansas City S2	4.45	5.35	5.425	7.30		11.50	
Lackawanna B3	4.45	5.35	5.425		5.275		
Minneapolis C6	4.45	5.35	5.425	7.30	5.275	11.50	
Pittsburgh O/I					11.00	11.50	
Pittsburgh P5					11.00	11.50	
Pittsburgh J3				7.30			
Seattle B2						5.425	12.00
Stedton B3	4.45	5.425			5.275		
Struthers Y1			7.30				
Torrance C7					5.425		
Williamsport S5	5.35						
Youngstown R3			7.30				

ELECTRICAL SHEETS

22-Gage	F.o.b. Mill Cents Per Lb.	Hot-Rolled (Cut Lengths)*		Cold-Reduced (Coiled or Cut Length)	
		Semi-Processed	Fully Processed	Semi-Processed	Fully Processed
Field		8.025	8.225		
Armature		8.50	8.75		9.25
Elect.		9.10	9.35		9.65
Motor		10.10	10.35		10.65
Dynamo		11.00	11.25		11.75
Trans. 72		11.95	12.20		12.70
Trans. 45		12.50		Grain Oriented	
Trans. 55		13.00		Trans. 80	14.60
Trans. 52		14.00		Trans. 73	17.10

Producing plants: Beach Bottom (W3); Brackenridge (A5); Granite City (G2); Indiana Harbor (I3); Mansfield (E2); Newport, Ky. (N5); Niles, O. (N3); Vandergriff (U1); Warren, O. (R5); Zanesville (A7).
*Coils 75¢ higher.

CLAD STEEL

Stainless-carbon	Plate	Sheet
No. 304, 20 pct.		
Coatesville, Pa., L4	35.50	
Washington, Pa., J2		
Claymont, Del., C4		
New Castle, Ind., J2	32.50	
Nickel-carbon		
10 pct., Coatesville, Pa., L4	39.50	
Immel-carbon		
10 pct., Coatesville, Pa., L4	47.90	
Manganese-carbon		
10 pct., Coatesville, Pa., L4	40.80	

* Includes annealing and pickling, sandblasting.

MERCHANT WIRE PRODUCTS

F.o.b. Mill	Standard & Coated Nails	Wire Fence 9-15 1/2 ga.	1/2" Fence Posts	Single Loop Bait Ties	Galv. Barbed and Twisted Barbed Wire	Merch. Wire Ann'd	Merch. Wire Galv.
Alabama City R3	137	140	155	159	6.90	7.30	
Alhquipp, Pa. J3	137	149	157	159	6.90	7.425	
Atlanta A5	139	151	157	164	7.00	7.525	
Bartonsville K2	137	151	157	164	7.00	7.55	
Budala W6					6.90	7.30	
Chicago, Ill. N4	137	149	155	162	6.90	7.45	
Cleveland A6	142						
Cleveland A5					6.90		
Crawfordsville M4	139	151	157	159	7.00	7.55	
Donora, Pa. A3	137	146	155	159	6.90	7.30	
Duluth A5	137	146	155	159	6.90	7.30	
Fairfield, Ala. T3	137	146	155	159	6.90	7.30	
Galveston D4	139						
Houston S2	142	154	164	170	7.30	7.70	
Johnstown, Pa. B3	137	149	157	162	6.90	7.45	
Juliet, Ill. A5	137	146	155	159	6.90	7.30	
Kokomo, Ind. C9	139	148	157	161	7.00	7.55	
Los Angeles B2	142	158	167	164	7.50	7.90	
Kansas City S2	142	154	155	160	7.15	7.55	
Minneapolis C6	137	151	155	163	6.90	7.45	
Monaca P5			145				
Maline, Ill. R3	156	160	179	179	7.85	8.25	
Pittsburgh, Cal. C7					6.90	7.90	
Portsmouth P7	137	146			159	6.90	7.30
Ramkin, Pa. A5	137	146	145	155	159	6.90	7.30
So. Chicago R3	139		157	164	7.00	7.55	
S. San Francisco C6					179		
Sparrows Pt. B3	139				164	7.00	7.55
Struthers, O. Y1	143				6.90	7.55	
Worcester A3					7.29		
Williamsport, Pa. S3			150				

Cut Nails, carloads, base \$8.30 per keg at Conshohocken, Pa. (A7).

* Alabama City and So. Chicago don't include zinc extra. Galvanized products composed with zinc at 11.6¢ per lb.

WARE-HOUSES

Base price, f.o.b., dollars per 100 lb.

Cities	City Delivery Charge	Sheets		Strip		Plates		Bars		Alloy Bars			
		Hot-Rolled	Cold-Rolled (15 gage)	Hot-Rolled	Cold-Rolled (10 gage)	Standard Structural	Hot-Rolled	Cold-Finished	As rolled A 4415	Hot-Rolled A 4140	Cold-Drawn A 4415	Cold-Drawn A 4140	As rolled Annealed
Baltimore	\$ 20	6.22	7.51	7.78	6.99	6.57	6.92	6.68	8.52				
Birmingham	.15	6.35	7.35	8.25	6.60	6.60	6.65	6.65	6.60	9.00			
Boston	.10	6.50	8.10	9.00		7.23	7.49	7.29	6.60	12.60	12.45	15.15	15.10
Buffalo	.20	6.35	7.40	8.30	6.70	6.50	6.70	6.50	7.85	12.50	12.15	14.85	14.75
Chicago	.20	6.38	7.38	8.30	6.62	6.52	6.60	6.51	7.50	12.25	11.90	14.60	14.55
Cincinnati	.15	6.49	7.37	8.25	6.86	6.81	6.91	6.75	7.80	12.55	12.15	14.90	14.80
Cleveland	.20	6.53	7.42	8.30	6.91	6.86	6.80	7.85	12.15	12.15	14.85	14.85	14.61
Cleveland	.20	6.38	7.38	8.30	6.72	6.69	7.02	6.27	7.60	11.90			
Denver		6.15	9.15	10.37	8.40	8.10	8.15	8.30	9.27				16.30
Detroit	.20	6.57	7.57	8.50	6.90	6.80	7.16	6.79	7.77	12.45	12.10	14.80	14.75
Houston	.20	7.35	7.80	9.53	7.70	7.35	7.60	7.70	9.50				
Kansas City	.20	7.05	8.05	9.05	7.29	7.19	7.36	7.16	8.67	12.27			
Los Angeles	.20	7.50	9.35	9.95	7.85	7.45	7.65	7.45	10.15		13.20		16.35
Memphis	.10	6.70	7.60		6.90	7.01	7.00	6.88	8.24				
Milwaukee	.20	6.47	7.47	8.21	6.71	6.61	6.86	6.80	7.69	12.34	11.99	14.69	14.64
New Orleans	.15	6.70	7.65	9.23	6.90	6.90	7.05	6.90	8.70				16.70
New York	.10	6.97	7.70	8.79	7.36	7.18	7.13	7.30	8.33	12.63	12.25		14.93
Pittsburgh	.20	6.90	8.46	9.99	7.54	7.27	7.38	7.37	8.73				
Pittsburgh	.20	7.00			7.10	7.10	7.10	7.10	8.60				
Philadelphia	.10	6.10	7.20	8.00	6.96	6.40	6.54	6.74	8.19	11.66	12.21		14.86
Pittsburgh	.20	6.38	7.38	8.23	6.72	6.52	6.60	6.51	7.85	12.25	11.99	14.60	14.55
Portland	.20	7.60	8.75	9.80	7.85	7.45	7.60	7.55	10.95				
Salt Lake City	.20	7.65	10.20	10.70	9.05	7.70	7.70	8.80	10.95				
San Francisco	.20	7.95	8.95	9.35	7.90	7.40	7.50	7.35	10.05		13.20		16.35
Seattle	.00	8.10	9.80	10.15	8.20	7.60	7.75	7.90	10.95		13.65		16.30
St. Louis	.20	6.82	7.67	8.54	6.91	6.81	7.00	6.80	7.89	12.54	12.19	14.84	14.45
St. Paul	.15	6.87	8.03	8.94	7.29	7.19	7.35	7.16	8.30		12.50		15.21

Base Quantities (Standard unless otherwise keyed): Cold finished bars: 2000 lb or over. Alloy bars: 1000 to 2000 lb. All others: 2000 to 9999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may not be combined with each other or with galvanized sheets for quantity.

Exceptions: (1) 1500 to 9999 lb. (2) 1000 lb or over. (3) \$2.55 delivery. (4) 1000 to 1999 lb, \$2.55 delivery.

C-R SPRING STEEL

Cents Per Lb F.o.b. Mill	CARBON CONTENT				
	0.26-0.40	0.41-0.60	0.61-0.80	0.81-1.05	1.06-1.35
Bridgeport, New	5.75	8.05	9.00	11.15	13.85
Bristol, Conn. S7*	5.75	8.05	9.00	10.95	13.25
Buffalo, N. Y. R7	5.75	8.05	9.00	10.95	13.25
Carnegie, Pa. S9	5.75	8.05	9.00	11.15	13.85
Cleveland A5	5.75	8.05	9.00	11.15	13.85
Detroit D1	5.85	8.25	9.20	10.95	
Detroit D2	5.85	8.25	9.20		
Harrison, N. J. C11	6.00	8.20	9.30	11.45	14.15
Indianapolis C5	6.00	8.20	9.30	11.15	13.85
New Britain, Pa. B4	5.75	8.05	9.00	10.95	
New Haven, Conn. D7	6.20	8.35	9.30	11.25	
Pawtucket, R. I. N7	6.30	8.35	9.30	11.45	14.15
Riverdale, Ill. A1	5.85	8.05	9.00	11.15	13.85
Sharon, Pa. S1	5.75	8.05	9.00	11.15	13.85
Trenton R4	6.35	8.35	9.30	11.25	13.40
Wallingford W1	6.20	8.35	9.30	11.45	14.15
Warren, Ohio W4	5.75	8.05	9.00	11.15	13.85
Watson, W. Va. W3	5.85	8.05	9.00	10.95	13.25
Worcester, Mass. A5	6.40	8.35	9.30	11.45	14.15
Youngstown C5	5.85	8.05	9.00	11.15	13.85

* Sold on Pittsburgh base.

BOILER TUBES

\$ per 100 ft. carload lots, cut 10 to 24 ft. F.o.b. Mill	Size		Seamless		Elec. Weld	
	OD-In.	B.W. Ga.	H.R.	C.D.	H.R.	C.D.
Babcock & Wilcox	2	13	28.33	33.97	27.48	32.95
	2 1/2	12	38.15	45.74	37.00	44.38
	3	12	44.95	52.82	42.72	51.23
	3 1/2	11	51.43	61.66	49.80	59.81
	4	10	68.29	81.88	66.24	79.42
National Tube	2	13	28.33	33.97	27.48	
	2 1/2	12	38.15	45.74	37.00	
	3	12	44.95	52.82	42.72	
	3 1/2	11	51.43	61.66	49.80	
	4	10	68.29	81.88	66.24	
Pittsburgh Steel	2	13	28.33	33.97		
	2 1/2	12	38.15	45.74		
	3	12	44.95	52.82		
	3 1/2	11	51.43	61.66		
	4	10	68.29	81.88		

Miscellaneous Prices

(Effective Jan. 11, 1955)

TOOL STEEL

F.o.b. mill					
W	Cr	V	Mo	Co	per lb
18	4	1	—	—	\$1.54
18	4	1	—	5	2.245
18	4	2	—	—	1.795
1.5	4	1.5	8	—	.90
6	4	2	6	—	1.29
High-carbon chromium					
Oil hardened manganese					
Special carbon					
Extra carbon					
Regular carbon					
Warehouse prices on and east of Mississippi are 3.5¢ per lb higher. West of Mississippi, 5.5¢ higher.					

CAST IRON WATER PIPE

Per Net Ton	
6 to 24-in., del'd Chicago	\$111.80 to \$115.30
6 to 24 in., del'd N. Y.	115.00 to 116.00
6 to 24-in., Birmingham	98.00 to 102.50
6-in. and larger f.o.b. cars, San Francisco, Los Angeles, for all rail shipments; rail and water shipments less	\$129.50 to \$131.50
Class "A" and gas pipe, \$5 extra; 4-in. pipe is \$5 a ton above 6-in.	

LAKE SUPERIOR ORES

51.50% Fe; natural content, delivered lower Lake ports. Prices effective July 1, 1953, to end of 1954 season.

Gross Ton	
Openhearth lump	\$11.15
Old range, bessemer	10.30
Old range, nonbessemer	10.15
Mesabi, bessemer	10.05
Mesabi, nonbessemer	9.90
High phosphorus	9.90

Prices based on upper Lakes rail freight rates, Lake vessel freight rates, handling and unloading charges, and taxes thereon, in effect on June 24, 1953. Increases or decreases after such date are for buyer's account.

COKE

Furnace, beehive (f.o.b. oven)		Net-Ton
Connellsville, Pa.		\$14.25 to \$14.50
Foundry, beehive (f.o.b. oven)		
Connellsville, Pa.		\$16.50 to \$17.00
Foundry, oven coke		
Buffalo, del'd		\$28.08
Chicago, f.o.b.		24.50
Detroit, f.o.b.		25.50
New England, del'd		26.05
Seaboard, N. J., f.o.b.		24.00
Philadelphia, f.o.b.		23.00
Swedeland, Pa., f.o.b.		23.00
Painesville, Ohio, f.o.b.		25.50
Erie, Pa., f.o.b.		25.00
Cleveland, del'd		27.43
Cincinnati, del'd		26.56
St. Paul, f.o.b.		33.75
St. Louis, f.o.b.		26.00
Birmingham, f.o.b.		22.65
Lone Star, Tex., f.o.b.		18.50

ELECTRODES

Cents per lb, f.o.b. plant, threaded, with nipples, unboxed.

GRAPHITE			CARBON		
Diam. (in.)	Length (in.)	Price	Diam. (in.)	Length (in.)	Price
24	84	20.50	40	100, 110	8.95
20	72	20.00	35	110	8.95
12 to 18	72	20.50	30	110	8.95
7 to 10	60	21.00	24	72 to 84	9.10
8	60	23.25	20	90	8.95
4	40	26.00	17	72	9.10
3	40	27.25	14	72	9.60
2 1/2	30	28.00	10, 12	60	10.30
2	24	43.00	8	60	10.55

BOLTS, NUTS, RIVETS, SCREWS

(Base discount, f.o.b. mill)

Machine and Carriage Bolts

	Discount	
	Less Case	C.
1/2 in. & smaller x 4 in. & shorter	2	22
1/2 in. & smaller x 6 in. & shorter	+3	18
9/16 in. & 5/8 in. x 6 in. & shorter	+4	17
3/4 in. & larger x 6 in. & shorter	+6	15
All diam. longer than 6 in.	+15	8
1/2 in. & smaller x 6 in. & shorter	+3	18
Lag, all diam. x 6 in. & shorter	6	25
Lag, all diam. longer than 6 in.	+2	19
Plow bolts	23	23

Nuts, H.P., C.P., reg. & hvy.

	Discount, Base Case or Keg	
	Discount	Case or Keg
3/4" or smaller	55	64
1/2" to 1 1/4" inclusive	58	66
1 1/4" to 1 1/2" inclusive	60	67 1/2

C.P. Hex regular & hvy.

All sizes	55	64
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Hot Galv. Nuts (all types)

3/4" or smaller	38	50
1/2" to 1 1/4" inclusive	41	52 1/2

Finished, Semi-finished, Slotted or Castellated Nuts

All sizes	55	66
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Rivets

Base per 100 lb	
1/2 in. & larger	\$9.25
Pet Off List	
7/16 in. and smaller	37

Cap Screws

	Discount	
	Bright	H.C. Heat Treated
New std. hex head, pack-aged		
1/2" x 6" and smaller and shorter	38	28
3/4" x 1" x 6" and shorter	15	1
New std. hex head, bulk*		
5" x 6" and smaller and shorter	50	42
3/4" x 1" x 6" and shorter	32	21
* Minimum quantity per item:		
15,000 pieces 1/2", 5/16", 3/8" diam.		
5,000 pieces 7/16", 1/2", 9/16", 5/8" diam.		
2,000 pieces 3/4", 1", 1 1/4" diam.		

Machine Screws & Stove Bolts

	Discount	
	Mach. Screws	Stove Bolts
Packaged, package list	33	43
Bulk, bulk list		
1/4-in.	59	17
100,000-199,999	63	25
200,000 & over	67	33
5/16-in.	59	17
100,000-199,999	63	25
200,000 & over	67	33
All diam.	59	
over 3 in.	63	
long	67	

Machine Screw & Stove Bolt Nuts

	Discount	
	Hex	Square
Packaged, package list	30	32
Bulk, bulk list		
1/2-in.	15	17
100,000-199,999	23	25
200,000 & over	31	33

REFRACTORIES

Fire Clay Brick

Carloads per 1000	
First quality, Ill., Ky., Md., Mo., Ohio, Pa. (except Salina, Pa., add \$5.00)	\$114.00
No. 1 Ohio	107.00
Sec. quality, Pa., Md., Ky., Mo., Ill.	107.00
No. 2 Ohio	98.00
Ground fire clay, net ton, bulk (except Salina, Pa., add \$1.50)	17.00

Silica Brick

Mt. Union, Pa., Ensley, Ala.	\$129.00
Childs, Hays, Pa.	125.00
Chicago District	130.00
Western Utah	
California	
Super Duty	
Hays, Pa., Athens, Tex., Windham	137.00
Curtner, Calif.	155.00
Silica cement, net ton, bulk, Eastern (except Hays, Pa.)	20.00
Silica cement, net ton, bulk, Hays, Pa.	22.00
Silica cement, net ton, bulk, Chicago District, Ensley, Ala.	21.00
Silica cement, net ton, bulk, Utah and Calif.	

Chrome Brick

Per net ton	
Standard chemically bonded, Balt.	\$86.00
Standards chemically bonded, Curtner, Calif.	96.25
Burned, Balt.	80.00

Magnesite Brick

Standard Baltimore	\$109.00
Chemically bonded, Baltimore	97.50

Grain Magnesite

St. % -in. grains	
Domestic, f.o.b. Baltimore	
in bulk fines removed	\$64.40
Domestic, f.o.b. Chewelah, Wash., Luning, Nev.	
in bulk	88.00
in sacks	43.75

Dead Burned Dolomite

Per net ton	
F.o.b. bulk, producing points in:	
Pa., W. Va., Ohio	\$14.50
Midwest	15.10
Missouri Valley	13.65

FLUORSPAR

Washed gravel, f.o.b. Rosclaire, Ill. Price, net ton; effective CaF ₂ content	
72 1/2%	\$44.00
70% or more	42.50
60% or less	38.00

METAL POWDERS

Per pound, f.o.b. shipping point, in ton lots, for minus 100 mesh.	
Swedish sponge iron c.i.f.	
New York, ocean bags	11.25¢
Canadian sponge iron,	
Del'd in East	12.0¢
F.o.b. ship, pt., carloads	9.5¢
Domestic sponge iron, 98+ % Fe, carload lots	9.5¢
Electrolytic iron, annealed, 99.5+ % Fe	38.0¢
Electrolytic iron, unannealed, minus 225 mesh, 99+ % Fe	62.5¢
Hydrogen reduced iron minus 300 mesh, 98+ % Fe	63.0¢ to 80.0¢
Carbonyl iron, size 5 to 10 micron, 98%, 00.8+ % Fe	83.0¢ to \$1.18
Aluminum	31.5¢
Brass, 10 ton lots	29.50¢ to 36.50¢
Copper, electrolytic	43.50¢
Copper, reduced	43.50¢
Cadmium, 100-199 lb. 95¢ plus metal value	
Chromium, electrolytic, 99% min., and quality, del'd	32.60
Lead	21.00¢
Manganese	57.0¢
Molybdenum, 99%	82.75
Nickel, unannealed	93.50¢
Nickel, annealed	96.50¢
Nickel, spherical, unannealed	93.50¢
Silicon	43.50¢
Solder powder, 7.0¢ to 9.0¢ plus met. value	
Stainless steel, 302	91.0¢
Stainless steel, 316	91.10
Tin	14.04¢ plus metal value
Tungsten, 99% (65 mesh)	44.06
Zinc, 10 ton lots	17.5¢ to 25.0¢

Ferroalloy Prices

(Effective Jan. 11, 1966)

Ferrochrome

Contract prices, cents per lb contained Cr, lump, bulk, carloads, del'd, 65-72% Cr, 2% max Si.

0.025% C ...	36.00	0.15% C ...	23.75
0.025% C ...	34.50	0.20% C ...	33.50
Simplex ...	34.50	0.50% C ...	33.25
0.06% C ...	34.50	1.00% C ...	33.00
0.10% C ...	34.00	2.00% C ...	32.75
65-69% Cr, 4-9% C ...	24.75		
62-66 Cr, 4-6% C, 6.9% Si ...	25.60		

S. M. Ferrochrome

Contract prices, cents per pound, chromium contained, lump size, delivered.

High carbon type: 60.55% Cr, 4-6% Si, 4-6% Mn, 4-6% C.

Carloads ...	25.85
Ton lots ...	28.00
Less ton lots ...	29.50

High Nitrogen Ferrochrome

Low-carbon type 67-72% Cr, 0.75% N. Add 5¢ per lb to regular low carbon ferrochromes price schedule. Add 3¢ for each additional 0.25% of N.

Chromium Metal

Contract prices, per lb chromium contained, packed, delivered, ton lots, 97% min. Cr, 1% max. Fe.

0.10 max. C ...	\$1.18
0.50% max. C ...	1.18
9 to 11% C ...	1.20

Low Carbon Ferrochrome Silicon

(Cr 34-41%, Si 42-49%, C 0.05% max.) Contract price, carloads, f.o.b. Niagara Falls, freight allowed, lump 4-in. x down, \$4.75¢ per lb contained Cr plus 12.00¢ per lb contained Si. Bulk 3-in. x down, 25.05¢ per lb contained Cr plus 10.80¢ per lb contained Si. Bulk 1-in. x down, 25.25¢ per lb contained Cr plus 11.00¢ per lb contained Si.

Calcium-Silicon

Contract price per lb of alloy, lump, delivered, 30-33% Cr, 60-65% Si, 3.00 max. Fe.

Carloads ...	22.00
Ton lots ...	19.10
Less ton lots ...	23.60

Calcium-Manganese-Silicon

Contract prices, cents per lb of alloy, lump, delivered, 16-20% Ca, 14-18% Mn, 53-59% Si.

Carloads ...	20.00
Ton lots ...	22.30
Less ton lots ...	23.30

SMZ

Contract prices, cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe ½ in. x 12 mesh.

Ton lots ...	17.50
Less ton lots ...	19.50

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, V-5; 38-42% Cr, 17-19% Si, 8-11% Mn, packed.

Carload packed ...	16.60
Ton lots ...	18.10
Less ton lots ...	19.35

Graphidex No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, Si 48 to 53%, Ti 9 to 11%, Ca 5 to 7%.

Carload packed ...	17.50
Ton lots to carload packed ...	18.50
Less ton lots ...	20.00

Ferromanganese

Maximum contract base price, f.o.b., lump size, base content 74 to 76 pct Mn:

Cents per lb	
Producing Point	
Marietta, Ashtabula, O.; Alloy, W. Va.; Sheffield, Ala.; Portland, Ore.	9.50
Clairton, Pa.	9.50
Sheridan, Pa.	9.50
Philo, Ohio	9.50
Add or subtract 0.1¢ for each 1 pct Mn above or below base content.	
Briquets, delivered, 66 pct Mn:	
Carloads, bulk	11.85
Ton lots packed	13.65

Spiegeleisen

Contract prices, per gross ton, lump, f.o.b. Palmerton, Pa.

Manganese	Silicon	Price
16 to 19%	3% max.	\$84.00
19 to 21%	3% max.	86.00
21 to 23%	3% max.	88.50
23 to 25%	3% max.	91.00

Manganese Metal

Contract basis, 2 in. x down, cents per pound of metal, delivered.

95.50% min. Mn, 0.3% max. C, 1% max. Si, 2.5% max. Fe.

Carload, packed ...	45.00
Ton lots ...	43.50

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, f.o.b. Marietta, O., delivered, cents per pound.

Carloads ...	30.00
Ton lots ...	32.00
250 to 1999 lb ...	34.00
Premium for hydrogen-removed metal ...	0.75

Medium Carbon Ferromanganese

Mn 80% to 85%, C 1.25 to 1.50. Contract price, carloads, lump, bulk, delivered, per lb of contained Mn ... 21.35¢

Low-Carb Ferromanganese

Contract price, cents per pound Mn contained, lump size, del'd Mn 85-90%.

Carloads	Ton	Less	
0.07% max. C, 0.06% P, 90% Mn ...	32.00	33.85	35.05
0.07% max. C ...	29.95	31.80	32.80
0.15% max. C ...	28.45	30.30	31.50
0.20% max. C ...	26.95	28.80	30.00
0.50% max. C ...	26.45	28.30	29.50
0.75% max. C, 40-55% Mn, 5.0-7.0% Si ...	23.45	25.30	26.50

Silicomanganese

Contract basis, lump size, cents per pound of metal, delivered, 65-68% Mo, 18-20% Si, 1.5% max. C for 2% max. C, deduct 0.2¢.

Carload bulk ...	11.00
Ton lots ...	12.65
Briquet contract basis carlots, bulk, delivered, per lb of briquet ...	12.45
Ton lots, packed ...	14.55

Silvery Iron (electric furnace)

Si 14.01 to 14.50 pct, f.o.b. Keokuk, Iowa, or Wenatchee, Wash., \$85.00 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., \$88.00. Add \$1.00 per ton for each additional 0.50% Si up to and including 17%. Add \$1.45 for each 0.50% Mn over 1%.

Silicon Metal

Contract price, cents per pound contained Si, lump size, delivered, packed.

	Ton lots	Carloads
96% Si, 2% Fe ...	20.10	18.00
97% Si, 1% Fe ...	20.60	18.50

Silicon Briquets

Contract price, cents per pound of briquets, bulk, delivered, 40% Si, 2 lb Si briquets.

Carloads, bulk ...	6.55
Ton lots ...	8.35

Electric Ferrosilicon

Contract price, cents per lb contained Si, lump, bulk, carloads, delivered.

25% Si ...	30.00	75% Si ...	14.40
50% Si ...	12.00	85% Si ...	16.10
65% Si ...	13.50	90% Si ...	17.35

Calcium Metal

Eastern zone contract prices, cents per pound of metal, delivered.

	Cast	Turnings Distilled
Ton lots ...	\$2.05	\$3.95
Less ton lots ...	2.49	3.30
		4.55

Ferrovandium

35-55% contract, basis, delivered, per pound, contained V.

Openhearth ...	\$3.00-\$3.10
Crucible ...	3.10-3.20
High speed steel (Primus) ...	3.20-3.25

Alsilfer, 20% Al, 40% Si, 40% Fe. Contract basis, f.o.b. Suspension Bridge, N. Y., per lb.

Carloads ...	9.25¢
Ton lots ...	10.15

Calcium molybdate, 46.3-46.6% f.o.b. Langloeth, Pa., per pound contained Mo ... \$1.25

Ferrocolumbium, 50-60%, 2 in. x D contract basis, delivered per pound contained Cb.

Ton lots ...	\$12.00
Less ton lots ...	12.05

Ferro-tantalum-columbium, 20% Ta, 40% Cb, 0.30% C, contract basis, del'd, ton lots, 2-in. x D per lb cont'd Cb plus Ta ... \$6.25

Ferromolybdenum, 55-75%, 200-lb containers, f.o.b. Langloeth, Pa., per pound contained Mo ... \$1.46

Ferrophosphorus, electric, 23-26%, car lots, f.o.b. Sigio, Mt. Pleasant, Tenn., \$4.00 unitage, per gross ton ... \$90.00

10 tons to less carload ... \$110.00

Ferrotitanium, 40% regular grade, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti ... \$1.35

Ferrotitanium, 25% low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti ... \$1.50

Less ton lots ... \$1.55

Ferrotitanium, 15 to 18% high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload, per net ton ... \$177.00

Ferrotungsten, ¼ x down, packed, per pound contained W, ton lots, f.o.b. ... \$2.80

Molybdc oxide, briquets, per lb contained Mo, f.o.b. Langloeth, Pa. ... \$1.27

bags, f.o.b. Washington, Pa., Langloeth, Pa. ... \$1.24

Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per lb. Carload, bulk, lump ... 15.50¢

Ton lots, packed lump ... 16.75¢

Less ton lots, lump, packed ... 17.25¢

Vanadium Pentoxide, 86 - 89% V₂O₅, contract basis, per pound contained V₂O₅ ... \$128

Zirconium, contract basis, per lb of alloy, 35-40%, f.o.b. freight allowed, ton lots ... 26.00¢

12-15%, del'd, lump, bulk-carloads ... 8.00¢

Boron Agents

Borasil, contract prices per lb of alloy del. f.o.b. Philo, Ohio, freight allowed, B, 314%, Si, 40-45%, per lb contained B ... \$5.25

Boritan, f.o.b. Niagara Falls

Ton lots, per pound ...	45¢
Less ton lots, per pound ...	50¢

Corbortan, Ti 15-21%, B 1-2%, Si 2-4%, Al 1-2%, C 4.5-7.5%, f.o.b. Suspension Bridge, N. Y., freight allowed.

Ton lots per pound ... 10.00¢

Ferroboron, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D, Ton lots ... \$1.20

F.o.b. Wash., Pa.; 100 lb up

10 to 14% B ...	.85
14 to 19% B ...	1.20
19% min. B ...	1.50

Grainal, f.o.b. Bridgeville, Pa., freight allowed, 100 lb and over

No. 1 ...	\$1.00
No. 6 ...	63¢
No. 79 ...	50¢

Manganese-Boron, 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd.

Ton lots ...	\$1.46
Less ton lots ...	1.57

Nickel-Boron, 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, del'd, less ton lots ... \$2.05

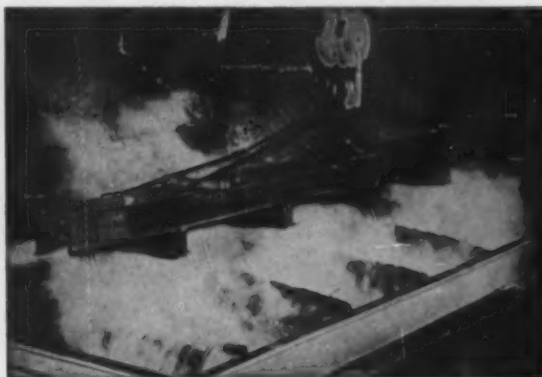
Silenc, contract basis, delivered.

Ton lots ...	45.00¢
--------------	--------

Descaling 5 tons of stainless wire *IN 15 MINUTES* with VIRGO® Descaling Salt



10-MINUTE IMMERSION in molten bath of Virgo Descaling Salt at 900°F. loosens scale. The bath is self-regenerating, and produces no toxic fumes. Immersion time and temperature are flexible, need not be watched closely.



WATER QUENCH removes much of the loose scale. The steam generated by immersing the hot metal in the water further loosens scale by its blasting action. The work is thus prepared for the final acid dip.



THREE-MINUTE DIP in dilute acid removes the now soluble scale. The work is ready for a rinse or hosing to wash off the acid. Result: a chemically clean surface—no pitting, etching or metal loss. TOTAL TIME—15 MINUTES.

SEND FOR THESE BULLETINS

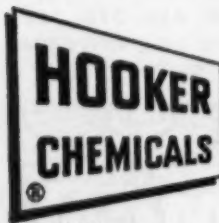
—Get the whole story on Virgo Descaling Salt and Virgo Molten Cleaner—what they are, how they work, their advantages, how they fit your operations, and the Hooker services you enjoy as a user of the process. Send for these bulletins today.



VIRGO DESCALING SALT—Producers and fabricators of stainless and alloy steels use Virgo Descaling Salt to quickly, positively remove scale produced by hot rolling, forging, extruding, casting, annealing.

VIRGO MOLTEN CLEANER—quickly, positively desands and degraphitizes castings; removes grease, dirt, chemicals, paint, enamel, rubber, atmospheric corrosion and other impurities.

This process can be used on steel; castings; forgings; fabricated parts; material to be salvaged. It employs simple equipment, and is easily adapted to your production methods.



1-1443

From the Salt of the Earth

HOOKEE ELECTROCHEMICAL COMPANY

33 FORTY-SEVENTH ST., NIAGARA FALLS, N. Y.
NEW YORK, N. Y.
LOS ANGELES, CALIF.
CHICAGO, ILL.
TACOMA, WASH.

Hooker Electrochemical Company

33 FORTY-SEVENTH ST., NIAGARA FALLS, N. Y.

Please send me Bulletins checked: Virgo Descaling Salt ☐
Virgo Molten Cleaner ☐

NAME _____

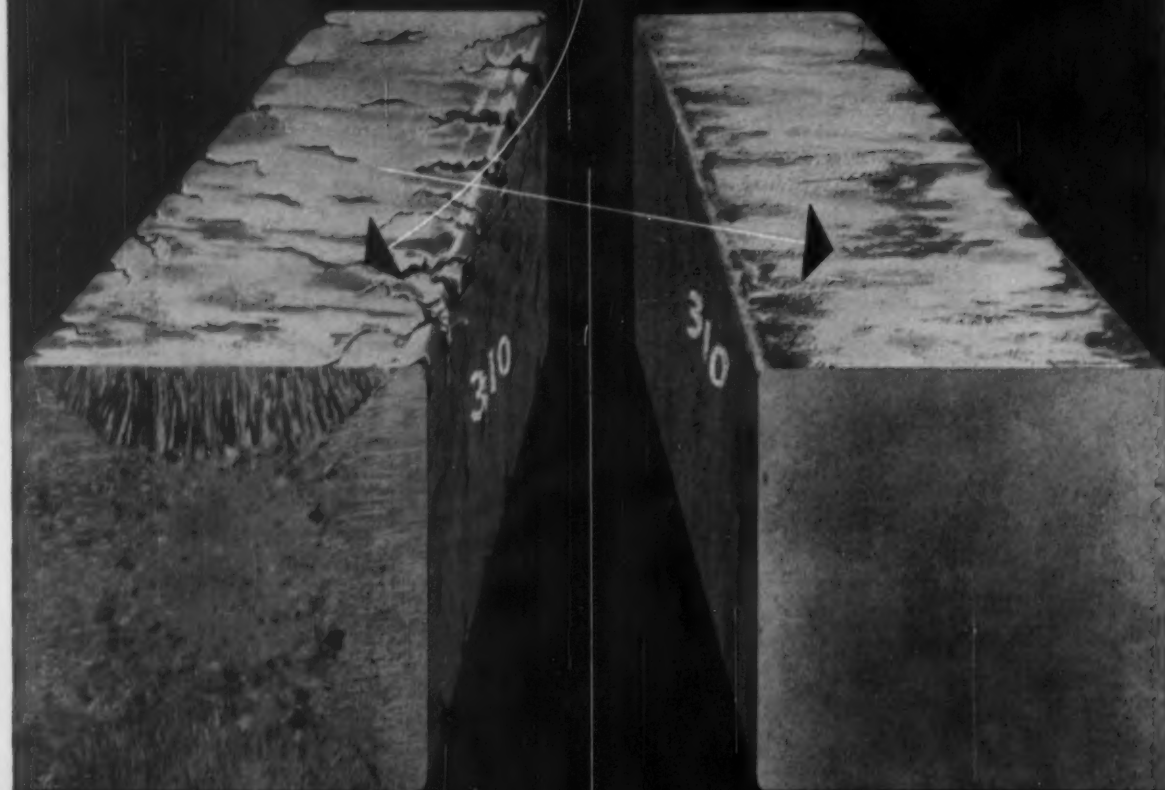
TITLE _____

COMPANY _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

... you can judge a billet by its cover



rare earths

made the difference

The two billets shown were produced by a prominent manufacturer of 310 stainless steel. Before rare earth additions, the billet on the left shows a coarse columnar structure, with frequent corner cracks. Heavy cogging was necessary to permit rolling with a minimum of hot tearing; after rolling a grinding loss from the edges incurred additional production time and expense.

Consider the billet on the right, and the great improvement made by a small economical addition of

MCA RareMeT Compound. The fine primary crystal pattern shown in the sectional view is taken from an unretouched, unmagnified photograph. This steel was rolled without intermittent heating cycles from ingot to billet, and frequently to final size, all with a minimum of hot tearing.

MCA's RareMeT Compound is currently being used successfully in A.I.S.I. grades **309, 310, 316, 317**, and other stainless steel by many progressive producers. *Write today for further information.*

MOLYBDENUM

Grant Building

CORPORATION OF AMERICA

Pittsburgh 19, Pa.

Offices: Pittsburgh, Chicago, Detroit, Los Angeles, New York, San Francisco
Sales Representatives: Edgar L. Fink, Detroit; Brundage-Danielson Co., Los Angeles, San Francisco
Subsidiary: Cleveland Tungsten, Inc., Cleveland
Plants: Washington, Pa., York, Pa.



Exclusive Built-in Shock Absorber

PROTECTS DEEP-DOWN PULLING POWER

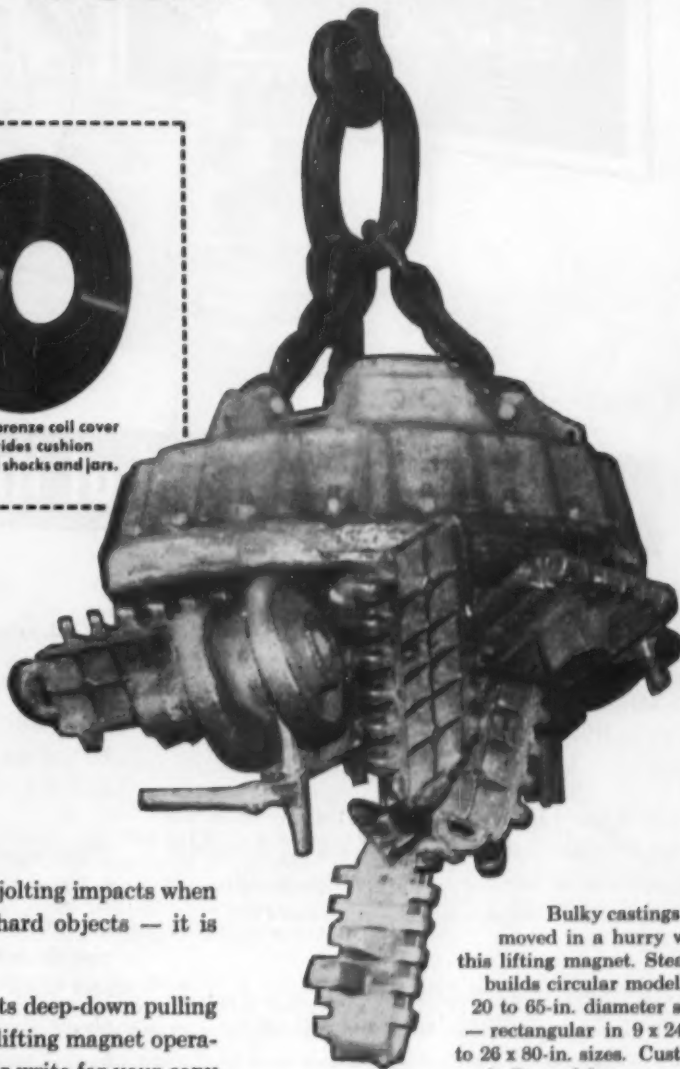


Powerful, deep-field Stearns lifting magnets are built with an extra wall of protection against shocks and jars. In addition to the regular coil shield of chrome-nickel steel, Stearns adds a heavy bronze coil cover — an *exclusive* feature.

This shock-absorbing cover provides a double advantage—it is both ductile and tough. It not only absorbs jolting impacts when the magnet is banged against sharp, hard objects — it is strongly resistant to damage.

Find out *all* the ways Stearns protects deep-down pulling power — gives you long life, profitable lifting magnet operation. See your Stearns representative or write for your copy of Bulletin 35-B-1.

1078



Bulky castings are moved in a hurry with this lifting magnet. Stearns builds circular models in 20 to 65-in. diameter sizes — rectangular in 9 x 24-in. to 26 x 80-in. sizes. Custom-built models on request.

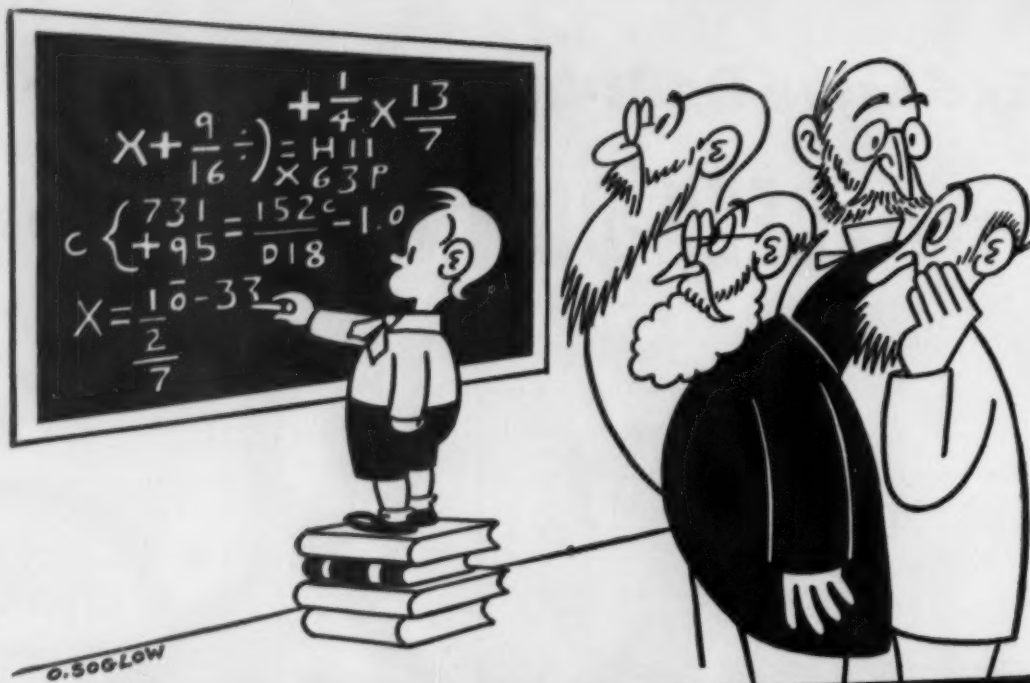
MAGNETIC EQUIPMENT FOR ALL INDUSTRY

STEARNS



MAGNETS

STEARNS MAGNETIC, INC.—491 South 28th Street, Milwaukee 46, Wisconsin



You'll be surprised at these figures!

Thanks to the thrift of employed Americans and the cooperation of 45,000 companies which have enrolled more than 8,000,000 men and women in the Payroll Savings Plan—

- Sales of E and H Bonds (H Bond is the current-income companion piece of the E Bond, sold only to individuals and purchased in larger denominations by executives) in 1954 totaled \$4.9 billion, a new peacetime record.

- Sales in 1954 exceeded all redemptions in that year of matured E Bonds and unmatured E and H Bonds by more than \$400 million—the highest net amount since 1949.

- Cash value of E and H Bonds outstanding reached a new record high of \$38.2 billion, a gain of \$1.5 billion in 1954.

- This \$38.2 billion cash holding by individuals represents 14% of the national debt. Never before has the national debt of our country been so widely held.

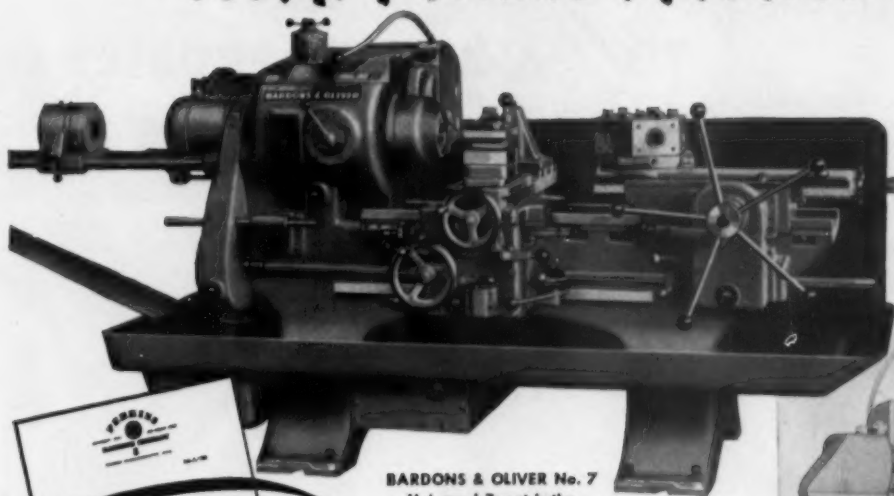
These figures, far more effectively than mere words, tell the story of The Payroll Savings Plan—why it is good for America, why it is good for business. If you do not have the Plan, or if you have the Plan and your employee percentage is less than 50%, phone, wire or write to Savings Bond Division, U. S. Treasury Department, Washington, D. C.

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The **Iron Age**

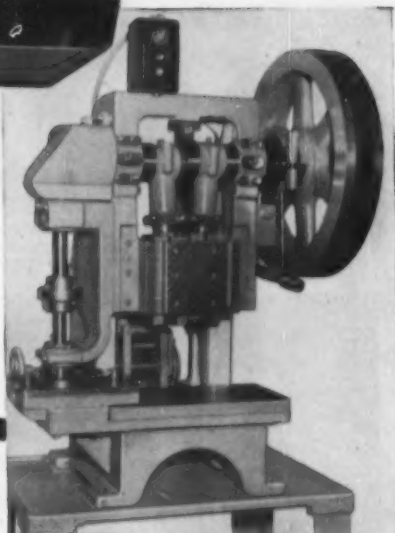


"TROUBLE-FREE PERFORMANCE" "LOW MAINTENANCE" ...At Perkins Machine Company



BARDONS & OLIVER No. 7
Universal Turret Lathe

Pictured at the right
is the Perkins Machine
Company's New Model
3 AAT Transfer Press,
parts of which are made on
BARDONS & OLIVER
Turret Lathes.



Bardons & Oliver, Inc.
1133 West Ninth Street
Cleveland 13, Ohio

Gentlemen:

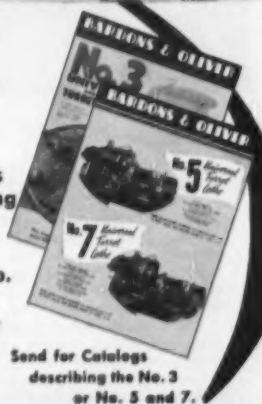
Perkins Machine Company purchased their first Bardons & Oliver Universal Turret Lathe over thirteen years ago. We now have in operation all three sizes of Bardons & Oliver Ram Type Universal Turret Lathes, namely No. 3, No. 5 and No. 7. These machines have been of great help in reducing the production cost of our complete line of presses, including our New Model No. 3 AAT.

We have always been able to depend on our Bardons & Oliver Turret Lathes to produce to close dimensional tolerances, while, at the same time removing the maximum amount of stock in minimum time.

Ease of operation, together with trouble-free performance, and low maintenance requirements, have made these machines favorites in our shop.

Very truly yours,
PERKINS MACHINE COMPANY

B. W. Perkins
B. W. Perkins, Treasurer



Send for Catalogs
describing the No. 3
or No. 5 and 7.

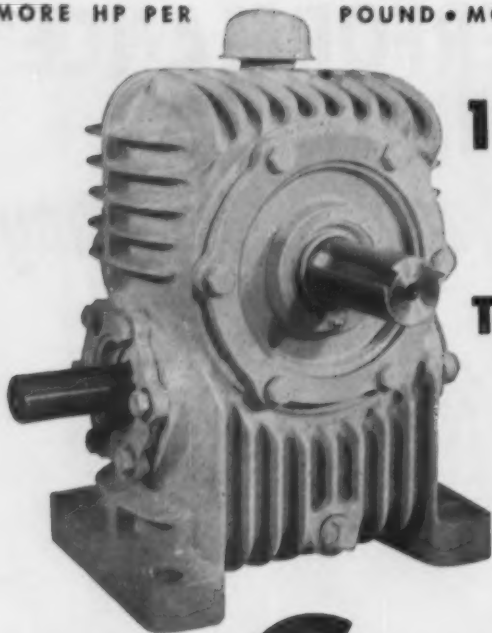
BARDONS & OLIVER, INC.

1136 WEST 9TH STREET

• CLEVELAND 13, OHIO

MORE HP PER

POUND • MORE HP PER CU. IN. • MORE HP PER DOLLAR



190,000 STANDARD *Stock* ANSWERS TO *Your* DRIVE PROBLEMS

Size for size, Cone-Drive speed reducers will out perform any other worm geared speed reducer on the market. Yet, you can select any one of 190,000 standard stock reducers to meet your specific drive problem.

**Ratios from 5:1 to 4900:1.
Loads from fractional to 800 HP.
Only 58 standardized mountings.**

You can see how almost 100 manufacturers are now using Cone-Drive gears. Ask for Bulletin CD-173.



CONE-DRIVE GEARS

DOUBLE ENVELOPING GEAR SETS & SPEED REDUCERS

Division, Michigan Tool Company
7171 E. McNichols Road • Detroit 12, Michigan



"HOW MEYERCORD
SERVES INDUSTRY"
No. 1 of a Series

MEYERCORD
Nameplate DECALS
Help You DESIGN
Your Product

Here's a way to shave production costs starting in the blueprint stage . . . a complete and continuous service to you and everyone in your organization concerned with product development and merchandising.

Meyercord Nameplate Decals identify your product and instruct consumers in its use. We produce Meyercord Nameplate Decals for *any* commercial surface . . . for *any* temperature condition . . . for *any* production run, short or long. And we take over the design problem.

Your Meyercord representative will show how our decals surpass in ease and speed of application . . . with low unit cost. He'll show you how to cut time, labor, and material costs . . . and he'll place our laboratory at your service . . . without obligation.

**FREE! "Mark-It" Manual
of Decal Nameplates**

Send today, on your company letterhead, for this valuable full-color guide to every industrial problem in marking, identification, instruction, and information.

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World's Largest Decal Manufacturers

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**Cutting off
Machines for
Saving All Kinds
of Metals**

THE ESPEN-LUCAS MACHINE WORKS
FRONT AND GIRARD AVE., PHILADELPHIA, PENNA.

READ THE ADVERTISING PAGES

Equipment Materials Services

Sources for every need in the Metalworking industry.

Use reply postcard on Page 97 to request further information on products advertised in this issue.

The **Iron Age**

P&H**OVERHEAD CRANES**

Here, in the Peoria plant of the Caterpillar Tractor Co., is one of their 11 new P&H Cranes with Magnetorque AC control. Caterpillar owns more than 100 P&H Overhead Cranes.

Eleven more for CATERPILLAR

...all **P&H** **MAGNETORQUE**[®] equipped!

The big demand is for Magnetorque! Old customers, new customers — everybody prefers Magnetorque. Here's why:

Management likes it better because it offers tops in crane performance with the convenience and economy of AC power.

Operators like it better because it's so much easier to use . . . because it makes any operator a star operator. It's simpler, smoother, more

accurate — the finest crane control ever devised.

And naturally, we like it because every Magnetorque-equipped crane we sell makes more friends for P&H. Through 7 years and over 900 new installations we've had no failures. Service problems are fewer than ever. Magnetorque lasts the life of the crane.

If you contemplate crane installations, see P&H. You'll quickly see why so many leading companies standardize on P&H.

P&H OVERHEAD CRANE DIVISION

HARNISCHFEGER CORPORATION

MILWAUKEE 46, WISCONSIN



NEW! Just off the press — a brand-new bulletin with full information about Magnetorque Control, about load curves, etc. Ask for Bulletin C-50.

the **P&H** Line



January 13, 1955

133

RAILWAY EQUIPMENT FOR SALE

Used - As Is - Reconditioned

**200—50-Ton;
All-Steel; Self-Clearing;
TWIN HOPPER CARS**
Cubical Capacity 1,700 Cu. Ft.

RAILWAY CARS

All Types

"SERVICE-TESTED"

FREIGHT CAR REPAIR PARTS

For All Types of Cars

LOCOMOTIVES

Diesel, Steam, Gasoline,
Diesel-Electric

RAILWAY TANK CARS and STORAGE TANKS

6,000- 8,000- and 10,000-Gallon
Cleaned and Tested

CRANES

Overhead and Locomotive

RAILS

New or Relaying

IRON & STEEL PRODUCTS, Inc.

General Office
13496 S. Brainerd Ave.
Chicago 33, Illinois
Phone: Mitchell 6-1212

New York Office
50-5 Church Street
New York 7, N. Y.
Phone: BEekman 3-8230

**"ANYTHING containing IRON
or STEEL"**

THE CLEARING HOUSE

News of Used and Rebuilt Machinery

See Normal Year . . . Like most business and industry, used machinery dealers in Detroit are looking forward to a normal but good year in 1955. "Realistic," is the way one salesman described market conditions.

The year should be normal because there are no artificial factors on the horizon. On the other hand, these normal factors appear to indicate an excellent metalworking year. And a good metalworking year will mean more in the equipment budgets to add to existing facilities or improve manufacturing methods.

As the year opens, there are few indications of inflated prices. Only a very few machines, such as jig borers, Kellering machines, and some specialized precision tools, are not easy to stock. Dealers have just about shaken prices down to realistic levels and buyers are out looking for "bargain" used equipment again.

Welcome Inflation's End . . . Strangely enough, most of the established dealers are glad to see inflated prices disappearing. Lower prices mean less competition from the users themselves and brokers and operators are now out of the field. The established dealer would rather serve his steady customers rather than having some hard-to-get machinery changing hands several times before getting to its final destination. In other words, the dealer feels more comfortable in his old function as a rebuilder and merchandiser than as a fast moving broker.

"Our business was down nearly 45 pct last year," one dealer remarked. "But I'm looking for a pretty good year coming up. Most of the businesses that are generally good used machinery customers are going well and we can expect improved market conditions in 1955."

Seek Production Machines . . . Demand for production machinery is picking up in the Motor City, a bright sign for those dealers who had accumulated good sized inventories. Demand from tool and die shops is still good, although opinion is divided whether this condition will continue.

Some believe that die shops will have good sledding literally only about as long as the snow lasts. Automotive die programs are not all out yet, but their extent is not as broad as it has been. It's just possible that die shops won't be in the market for machinery and equipment after late spring.

A lot of the optimism that is heard from the traditionally pessimistic used and rebuilt fraternity can be traced, in Detroit at least, to the very strong upswing in metalworking plants and shops of all kinds.

Last Half Slow . . . The last half of 1954 was particularly bad in this area with unemployment high and very few orders for the medium and small plants that make up the bulk of the business. In fact, many went out of business. Now, with most auto plants going at top speed, their suppliers and feeder shops are hard pressed to keep up with demand.

As a result, they are buying more equipment, either replacing old items for greater efficiency, or adding to their production facilities. Even some of the big auto companies, who generally stay in the new categories, are going to used and rebuilt sources to round out production facilities.

Improvement In Pittsburgh . . . Used and rebuilt equipment dealers in the Pittsburgh district are looking forward to a better business year in 1955 than they lived through in 1954.

CONSIDER GOOD USED EQUIPMENT FIRST

BAR TURNING MACHINE

#1 size BOP Modart Centerless Automatic Bar Turning Machine, Capacity 1" to 6" incl.

BENDING ROLLS

17" x 14" Bertach Initial Type Bending Roll—LATE
18" x 14" Bertach Initial Type Bending Roll
20" x 14" Hillos & Jones Pyramid Type Bending Roll

BRAKES—LEAF TYPE

8" x 14" Drels & Krump Size 100
10" x 14" Drels & Krump Size 200
12" x 14" Drels & Krump, Motor Driven

BRAKES—PRESS TYPE

8" x 14" Sturdybender Model C-15
10" x 14" Verson Model B1516

CRANE—LOCOMOTIVE

25 ton Industrial Brownhoist, 50' Boom, Diesel Engine

CRANES—OVERHEAD ELECTRIC

TRAVELING
5 ton P&H Trar-Lift 20' Span 220/440 A.C.
5 ton P&H Trar-Lift 20' Span 220 Volt A.C.
5 ton Niles 60' Span 220 Volt D.C.

5 ton P&H With A.C. Generator Set
5 ton Shepard Niles 20' Span 220/3/00 A.C.
5 ton Shepard Niles 20' Span 220/3/00 A.C.
5 ton Shepard Niles 20' Span 220 Volt D.C.
5 ton Harnischfeger 40' Span 220/3/00 A.C.
5 ton Harnischfeger 40' Span 220/3/00 A.C.
5 ton Case 80' Span 220 Volt D.C.
5 ton P&H 80' Span 115 Volt D.C.
5 ton With 220/440 AC Generator Set
50 ton Whiting 60' Span 220 Volt D.C.
50 ton Niles 60' Span 220/3/00 A.C.
120 ton Cleveland 60' Span 220 Volt D.C.
With 3 Trailers 42 1/2 ton & 10 ton Aux.

CUT-OFF MACHINE

Taylor Wilson Cut-off Machine, Capacity 2 1/2" to 6 1/2", Complete with Hdr. System & Elec. Equip.

DRAW BENCHES

25,000 M&K Chain Draw Bench, 41' Length of Draw
100,000 P&H Chain Draw Bench, Max. length bar 39'
With draw up to 4 1/2" max. round

FORGING MACHINES

17" x 14" Ajax
17" x 14" Ajax with Air Clutch
17" x 14" 3 1/2" x 8" x 3 1/2" x 4" x 5" Ajax
14" x 4" x 5" National

FURNACES—MELTING

5 ton Whiting Hydrex Ave. Top Charge

6 ton Haroult, Side Charge, with Transformer

10 ton Elec. Furnace Co. Arc Melting Furnace

HAMMERS—BOARD DROP—STEAM DROP—STEAM FORGING—800 lb. to 20,000 lb.

LEVELERS—ROLLER

54" Astma Standard, 17 Rolls 4 1/2" Dia.
72" H & J 3 Rolls 4 1/2" Dia.
72" Bottom, 28 Rolls 3 1/2" Dia.
72" Von-Engerer, 23 Work Rolls 2 1/2" Dia. Capacity 25 to 15 Gauge Mild Steel

LEVELER—STRETCHER

150 ton Garrison No. 2 Stretcher Leveler Capacity 48" wide x 13 Ga. Mild Steel

MULTISLIDE MACHINE

25 U B Multislides, Max. width of stock 4 1/2" by 600" thick. Edgewise Stock Straightener

PLATE DUPLICATOR

Thomas Machine Mfg. Co. Plate Duplicator, Handles Plates 6" x 16", Punch Capacity 6" Hole through 1/2" Plate

PRESES—HYDRAULIC

100 ton Southark 4-Column, 14" Stroke Piston 18" x 24"
150 ton United Steam Hydraulic Forging Press "C" Frame, 18" Stroke, 24" Throat
350 ton Lake Erie 4-Column, 30" Between Columns, 24" Stroke, 36" Daylight
500 ton Wood 4-Column, 34" Stroke, 73" x 90" Between Columns
1200 ton Birdshore 4-Column, 30" Stroke 26" x 54" Between Columns

PRESES—INCLINABLE

No. 8 Bliss OBI, 90 ton, 6" Stroke
No. 6 Bliss OBI, 60 ton, 3" Stroke

PRESS—PUNCH

200 ton Verson BI-40 Eccentric Type Single Point Suspension Press, 30" Stroke, Bed 40" x 44"

PRESES—TRIMMING

No. 74 1/2 Bliss 90 Ton, 4" Stroke, 10 1/2" Shut Height
No. 75 1/2 Bliss 110 ton, 4" Stroke, 10 1/2" Shut Height

PUNCH & SHEAR COMBINATIONS

#3 Long & Allistatter Double End, Punch 1" x 1" x 28 Wicks Single End 42" Throat 1 1/4" x 1"
Style W Cleveland Single End, 60" Throat, 312 Ton With Attachment for Dishling Heads

ROLLING MILLS

Torrington Tanden Flattening Mill with Edge Conditioning Rolls, Flattening Rolls 8" x 4"
7 1/4" Steel Four High Rolling Mill

8" x 13" Blake & Johnson Single Stand Two High

10" x 14" United Three Stand Two High

12" x 14" Waterbury Farrel Tumbler Mill

12" x 14" Philadelphia 3-High Cold Rolling Mill

18" x 20" Lewis Two High Two Stand

20" x 28" P&H Two High Two Stand

30" M&K 3-High Reversing Blooming Mill

SHEAR—GATE

80" x 14" Birdshore, With Approach Table and Stacking Platform

SHEARS—ANGLE

4000" Niles & Jones
4000" Long & Allistatter Size B
4000" Long & Allistatter Size C

SHEARS—ROTARY

2 1/2" Quickwork Rotary Shear, 94" Throat
2 1/2" Quickwork Whiting #25A with Circle Cutting Att.
2 1/2" Kling #250, With Flanging Attachment
2 1/2" Quickwork Circle Shear 18" Throat, Circle Cutting Attachment

SHEARS—SQUARING

8" x 2 1/2" Niagara TSB, Motor Dr. NEW 1801
10" x 8 1/2" Drels & Krump, Motor Driven
12" x 8 1/2" Niagara, Motor Driven—LATE
12" x 12 Ga. Niagara #46-B
120" x 13 Ga. Niagara #9310-B

SLITTERS

12" Waterbury Farrel No. 1 Slitter
30" Yoder Coil Slitting Line, Uncoiler & Recoiler
30" Yoder Coil & Sheet Slitter
72" Yoder Sheet Slitter

STRAIGHTENERS

No. 6 Modart Continuous Automatic Straightening Machine, Capacity 1/2" to 1 1/2" Dia. Bars any length, or up to 3" Tubing, Motor Driven

Kane & Beach 8-Hall Straightener, Capacity 1/2" to 1 1/2" Rolled Motor Drive

No. 2 Taylor Wilson Straightening Slitting & Burnishing Machine, Capacity 1/2" to 1 1/2" Tubing

30" Baldwin Automatic Strip Straightener & Cutting Machine

40" Cleveland Punch & Shear Works Strip Straightener & Cut-off Machine

TESTING MACHINES

3000 lb. Riehle Model PB-1 Universal
50,000 lb. Baldwin Southark Comp. Testing Machine
60,000 lb. Southark-Tate-Ingersoll Universal Hyd.
100,000 lb. Tinius Olsen Universal 4-Screw
100,000 lb. Tinius Olsen Universal 8-Screw
500,000 lb. Tinius Olsen Chain Testing Machine

Manufacturing

A. T. HENRY & COMPANY, INC.

Equipment

50 CHURCH ST., NEW YORK CITY 8

Telephone COrTlandt 7-3437

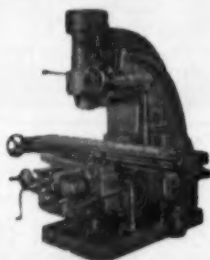
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Shears, 6" Stroke, Capacity 275 Ton.

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Chambersburg Board Drop Hammers, 800 Lb., 3000 Lb.

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9" arm 18" col. American radial, H.D.

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8" x 18" No. 5 Brown & Sharpe Hyd. Surf., 1941

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72" Hanchett 3-spd. rotary surface, new 1946.

18" x 96" Landis gap type cylindrical, new 1941.

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24" x 20" bed LeBlond H.D., G.H., older.

48" x 32" x 30" bed NBP geared head, like new.

54" x 40" bed Pond, older but exs.

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42" x 42" x 18" Ingersoll adj. planer type.

60" x 48" x 18" Ingersoll adj. rail planer type.

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100 ton No. 7 1/2" Verson OBI (2) 1939.

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100 ton 7848 Verson Gap Frame.

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250 ton No. 23 Bliss K-J coining or embossing.

300 ton No. 1039 Hamilton D.C. adj. bed 80" x 102".

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1000 ton No. 608 Toledo coining or forging.

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36" G & E invisible, F.M.O., late type.

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3 1/2" Ajax suspended slides, steel frame.

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No. 2 Cochran Bly Filing Machine pedestal type, belt drive
Riehle Hardness Tester, capacity 3000 lbs.
Dwight State Machine Co. Marking Machine, hand operated
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Portable Greasing Machine, motor operated, new
2 spindle D. E. Whiton single end Centering Machine, m.d.
American Aircraft Motor Generator Set, Model MASO 104
Hanchett Grinding Head, type OI, 20" segmental wheel

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Late type 12" x 40" Landis Type C Universal Hydraulic Cylindrical Grinder Serial #17696
72" Niles Beament Pond Vertical Boring and Turning Mill—Reconditioned.
#121A Excellis Four Spindle Double End Boremill, late.
#72A3—Head Cismatic Internal Grinder — Serial #12100—Reconditioned and guaranteed.
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2-3-4 Spindle Leland Gifford Drills.
1— $\frac{1}{2}$ " Cromatic & Tooling.
#28 Brown & Sharpe Standard Plain Horizontal Milling Machine—Serial #4197.
24" Bullard Vertical Boring Mill — Spiral Drive. Serial #15003.
8 x 8" x $\frac{1}{2}$ " Kling Angle Shear Serial #1277.

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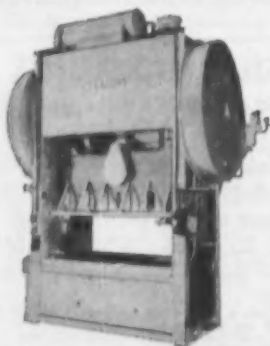
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250 V. DC M-G SETS			
KW	MAKE	TYPE	SPEED
3000	G.E.	New 5-unit	
1100	G.E.	New 5-unit	
930	Cr. Wh.	C'D	1200
5-195	G.E.	MPC	1200
400 V. DC M-G SETS			
KW	MAKE	TYPE	SPEED
1250	G.E.	MCP New	720
435	G.E.	MPC	1200
8-400	G.E.	MPC	720
250	G.E.	CD	1200
230 V. DC MOTORS			
HP	MAKE	TYPE	SPEED
5-350	G.E.	MDP-422	875/750
3-300	G.E.	MPC	1100
250	G.E.	MDP-450	400/800
200/300	Rel.	1650-T	400/800
150	G.E.		825/875
150	West.	HK	1100
150	West.	HK-173	850
125	Rel.	1650-T	600
1-100	West.	HK-173	850
2-100	West.	HK-160	1100
8-100	Rel.	1650-T	400/1200
LOW VOLTAGE DC GENERATORS			
AMPS	MAKE	VOLTAGE	
4000/8000	RT Prods.	18/36	
8000	G.E.	40	
1000	G.E.	50	
3000/1500	Chander	12/24	
2000/1000	H.V.W.	613	

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Rivett No. 918 2nd-oper. Lathes.
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1—24" Wide Continuous Hot Strip and Plate Mill, 13 Stands for rolling slabs 3" x 24" x 10'. Including Furnaces, Electrics and Spares.

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1—12' x 1/4" Stamco Power Squaring Shear.

4—Salem Hood Type Annealing Furnaces, 7'6" x 21'0" x 7'8" high inside.

1—Chicago Pneumatic Air Compressor, 250 CFM at 100 psi. Complete with 50 H.P. Motor and Controls.

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Qu.	H.P.	Make	Type	Volts	RPM
1	2200	G.E.	MCP	600	400/500
1	2600	Whae.	Mill	600	230/400
1	1200	G.E.	MCP	600	750/950
1	800	Whae.	QM	250	140/170
1	900	Whae.		250	450/550
1	825	Whae.		250	85/190
1	600	Al. Ch.		250	400/800
1	600	Whae.	CC-216	400	200/900
1	500	G.E.	MCP	400	300/900
2	450	Whae.		550	415
1	400	G.E.	MCP	550	300/1050
1	300/300	G.E.	MCP	230	360/925
1	250	G.E.	MCP	230	400/600
1	200	Hal.	1870T	230	720
1	200	Whae.	CB-5115	250	400/800
1	150	G.E.		600	250/750
1	150	Cr. Wh.	65H	230	1150
1	150	Cr. Wh.	83H-TEFC	230	896
1	150	Whae.	RK-151B	230	900/1800
1	150	Whae.	RK-361	230	360/925
1	50/120	G.E.	MCP	230	350/1600
1	100	Whae.	RK-181	230	450/1000
1	100	G.E.	CDP-115	230	1754

M-G Sets—3 Ph. 60 Cy.

Qu.	K.W.	Make	RPM	D.C. Volts	A.C. Volts
2	3000/2400	G.E.	450	250/300	2300/4600
2	1750/2100	G.E.	514	250/300	2300/4600
1	3000	G.E.	508	250	11000
2	2000	G.E.	514	600	6000/12300
2	2000	G.E.	450	600	2300/4600
1	1500	G.E.	720	600	6000/12300
1	1500	G.E.	814	30/113	4000/12600
1	1000	G.E.	900	280	6500
2	1000	G.E.	720	600	2300/4600
2	750	G.E.	720	275	2300/4600
1	750	G.E.	814	30/113	2300
1	600	G.E.	720	350	440/2200

TRANSFORMERS

Qu.	KVA	Make	Type Ph.	Volts
1	6000	Whae.	OIBC 3	3300/26400
1	2500	Whae.	OIBC 3	26400/13200/440
3	3000	G.E.	HVDDJ 1	6600x13200
3	1000	G.E.	HVDDJ 1	2400x480
6	1000	Wagner	OIBC 1	12000x480
3	607	G.E.	HD 1	12000x2300

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MOTOR GENERATOR SETS

Qu.	K.W.	Make	RPM	Volts D.C.	Volts A.C.
1 (8-17)	2400	Whae.	720	600	4300/2400
1	1500	Whae.	720	600	3300
1	500	C.W.	720	275	2300/440
1	400	G.E.	1800	125/300	440
1	300	G.E.	720	275	3300
1	300	G.E.	720	250	2300/440
1	150	G.E.	720	250	2300/440
1	100	Whae.	600	275	3300
1	100	C.W.	1200	125	440/220
1	88	C.W.	1200	250	4000/2200

DIRECT CURRENT MOTORS

Qu.	HP	Make	Type	RPM
1*	8000	Whae.	Mill	600
1*	2800	Whae.	Mill	330/400
1*	1200	Whae.	Mill	400
1*	1200	Whae.	Mill	600
1*	600	Whae.	Mill	600
1	700	Whae.	Mill	285/700
1	600	G.E.	Q-149	1150
1	250	G.E.	MPC	325/975
1	200/250	G.E.	MPC	300/900
1	200	Whae.	Mill	300/1200
1	180	G.E.	MPC	400
1	90/100	G.E.	MPC	625/1125
1*	125	Whae.	RK-190	600
1	125	Whae.	RK-184	575/850
4	100	Ed. Dy.		450/1100
8	75	C. Wh.	SHB	600

(These are T.E.F.C. anti-friction bearings)

1	40	Whae.	RK-140	500/1700
1	25	G.E.	RF-14	500/1200
1	25	Whae.	RK-150	400/1300
1	25	Whae.	RK-140	400/1200
1	20	G.E.	CD-128	500/1200
1	15	Whae.	RK-60	575/1725
1	15	Bellman	185-T	800/1400
8	10	Whae.	RE-1001	500/1500
4	10	Whae.	RE-91	250/1600

*200 and 600 volt

TRANSFORMERS

Qu.	Kva	Make	Phase	Volts
8	750	Pills.	1	33,000-2300
3	607	Wagner	1	33,000/11,000-2300/4000
8	500	G	1	33,000/11,000-2300/4000
8	500	G.E.	1	18,200-3300
8	350	G.E.	1	2400-340/480
3	150	G.E.	3	2400/4150-540/480
8	100	G.E.	1	33,000/2300

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254 CFM 125 psi 10x10 Ingersoll ER-1 40 HP Elec
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270 CFM 125 psi Joy WL-60 2 available
275 CFM 125 psi 2 stage Chicago PS 50 HP Elec
285 CFM 125 psi 2 stage Gardner "WB" 50 HP Elec
289 CFM 100 psi 3 cylinder Dwyer 50 HP Elec
291 CFM 40 psi 3 cylinder Ingersoll Type 40
295 CFM 125 psi 10x11 Chicago T-8 2 available
312 CFM 100 psi 4 cyl. Gardner "AAG"-60 HP
343 CFM 500 psi 11 1/2" x 13 Worth HB2 Elec or steam
384 CFM 20 psi 12 x 7 Gardner "RK" 2 available
552 CFM 125 13/16" x 10 Ingersoll 100 HP Elec
560 CFM 125 psi 2 stage Chicago PSB 100 HP Elec
931 CFM 55 psi 17x13 Chicago T-8 Steam or Elec
1085 CFM 35 psi 20x12 Penn 3-A 100 HP Elec
1574 CFM 100 psi 22 1/2" x 18 PHE 3 available
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1723 CFM 110 psi "XPV" 4 corner Ingersoll Steam

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1-30 Ton Orion Diesel Loco. Crane
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Capacity 255 tons, Bed Area 30" x 29", 18"
Stroke of Slide, Marquette Air Cushion.
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CLEVELAND Double Cranks, 45-G-72, 45-D-40,
NIAGARA Double Cranks, 67C, 46C, 49BX,
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BLISS Nos. 22K, 23, 25K Knuckle Joint Presses.
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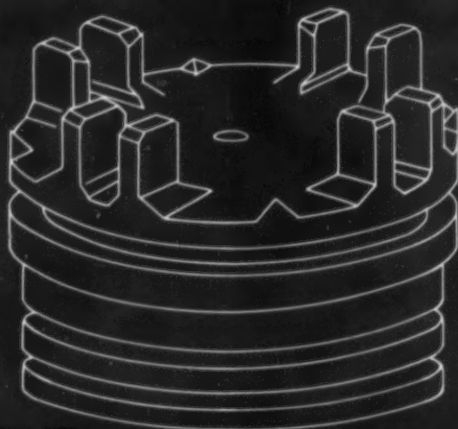
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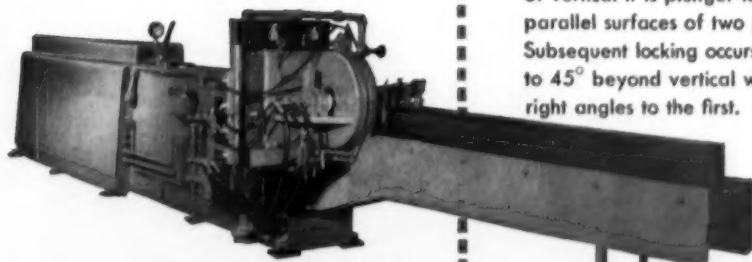
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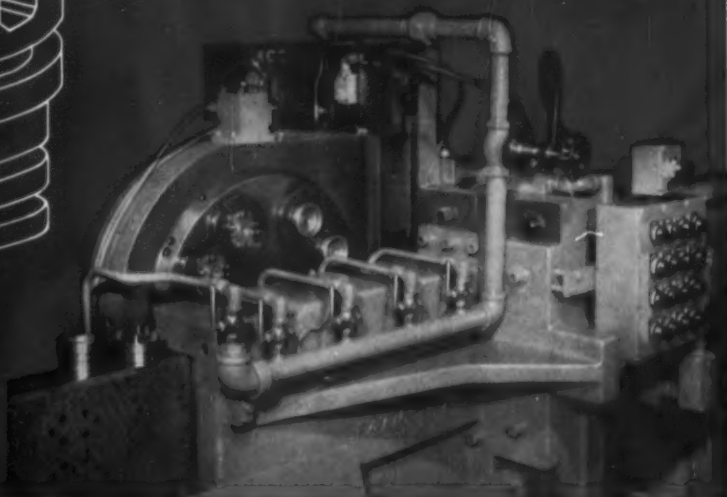
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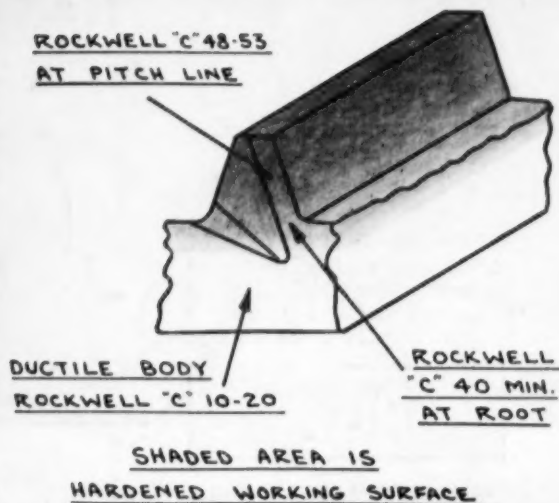
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